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PEDIATRIC SURGERY

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"With no language but a cry," children are asking for better surgical treatment of their ills and are begging for more thoughtful attention to congenital malformations with which it was their misfortune to be born. The newborn infant has no words to demand his rights and is aided only by a couple of flustered parents dismayed at the sudden misfortune of an unanticipated catastrophe. Many of the severest ills, especially of infants, are emergencies that preclude thoughtful analysis by parents of the consequences of the surgical care that their children are about to receive.

SPECIALIZATION IN PEDIATRICS

If our future is in the hands of the youth of the nation, then it is our responsibility to listen intently to the pleading cry of the child for a sound mind in a sound body. Towards this end pediatrics has made admirable progress during the past 50 years. At the turn of the century a pediatrician was scoffed at as that peculiar physician who took special training so he could weigh and feed babies and treat summer complaint. Advances in the medical care of children have been so great in response to demand that today specialists have developed within the specialty itself. We now have pediatric cardiologists, child psychiatrists, children's neurologists and endocrinologists, and many others. Much as we may decry the constant trend toward more and more specialization, it is as unavoidable as the forward movement of time. Patients are entitled to the improved care emanating from increased knowledge, and nobody is more anxious to give such care than the physician himself. Consider the hundreds of medical journals bulging with new discoveries every day. The information is at hand, and it is the responsibility of the medical profession to give the public the benefit of these researches, regardless of the number of specialties that may spring up. (What the medical student is going to do 100 years from now I do not know. He has plenty of trouble now getting a tiny smattering of pinpoint knowledge from each lordly specialist. And pity the poor dean at this time when each specialist bombards him with demands for more attention to his pet corner of medicine.)

Status of Pediatric Surgery.—Children's surgery has been forgotten. There are today in the United States about 45 children's hospitals; all are staffed by first-class pediatricians, but only 8 have surgical services headed by men who devote all or most of their time to pediatric surgery. William E. Ladd is the father of pediatric surgery in this country, but his clan, members of the pediatric surgical section of the American Academy of Pediatrics, consists of only about 33 men, of whom 21 devote 90 to 100% of their time to children's surgery and a dozen make it their major interest. Besides these groups, fortunately, there are in children's units of large hospitals and universities a number of general surgeons who have made children's surgery their avocation and have thoughtfully devoted enough time to it to become very skilled. A few medical schools have added a pediatric surgeon to their faculties. However, children's surgery in general, but especially that of infants, is still poorly done.

New Developments.—Progress in pediatric surgery has been so recent that a thorough realization of what can be done for children has not filtered through the medical profession to parents. Eventually parents will demand the same skill for the care of their children's surgical ills that is available for their own. Until about 15 years ago surgery of children consisted primarily of operations for appendicitis, hernia, pyloric stenosis, intussusception, empyema, and osteomyelitis. Recovery following operation for a congenital diaphragmatic hernia or atresia of the intestine in an infant was so unusual as to be worthy of a case report in medical literature. During recent years there have been added to the domain of children's surgery knowledge of the pathology of malrotation of the intestine, repair of congenital atresia of the esophagus with and without tracheoesophageal fistula, removal of congenital pulmonary cysts and lobectomy for congenital lobar emphysema, and the entire field of surgery of congenital heart disease; better understanding of the treatment of atresia of the rectum with all its complications; recognition of the pathology of congenital dilatation of the colon (Hirschsprung's disease); the practice of operative treatment of meconium ileus; and an aggressive instead of a defeatist attitude toward the treatment of

President's address delivered before the Institute of Medicine, Chicago, Dec. 6, 1954.

malignant tumors in children. Many more additions could be mentioned. Besides these, innumerable improvements have been made in simple procedures and in the preoperative and postoperative care of infants and children.

Many of the conditions mentioned above are relatively rare. Because rare, they are interesting surgically, so interesting in fact that it is naturally difficult for the general surgeon to forego the opportunity of making an attempt at a problem never before encountered. Does it necessarily follow that a surgeon skilled in the operative treatment of cancer of the lung can do equally well with an operation for tracheoesophageal fistula in a 5 lb. baby and with the handling of the demanding postoperative care? The proctologist with years of experience with hemorrhoids and resection of the rectum may be completely at sea when confronted with the intricate problem of atresia of the rectum. If the infant could talk he would say most entreatingly, "Please be careful of my sphincter. I'm going to need it for 67 years."

QUALIFICATIONS OF PEDIATRIC SURGEON

What is a pediatric surgeon? Does he differ from a general surgeon? What should be his qualifications? Obviously anyone considering pediatric surgery must love children sufficiently to be tolerant of their eccentricities, deaf to their yowling, but sensitive to their cries. He is not simply a person who operates on little persons. An operation done on a 150 lb. adult is not divided by a factor of 15 when one is operating on a 10 lb. child. An adult can be treated as a child but never a child as an adult.

Physiology of Children.—Pediatric surgery requires first of all knowledge of the physiology and habits of infants and children. Their respiration is fast and often irregular. Their pulse rate is rapid and their temperature labile. A newborn infant requires no fluid the first day of life but by the end of a week needs 60 cc. per pound (about 120 cc. per kilogram) of body weight each day. In cases of severe dehydration he may require twice that amount. Give an infant what he needs in the way of fluid, electrolytes, sugar, and blood, and what that infant will tolerate is constantly a matter of wonder and surprise. A day-old child will tolerate a prolonged operation far better than a 50-year-old adult. His cells are young, and he is unhampered by fear. He just fights to live. Yet the margin between good health and death is narrow. The child may appear to be on the road to recovery one hour and the next hour be dead.

Even the surgeon must know something about the caloric requirements of an infant and about when such a patient should be fed after operation. A newborn infant will survive nobly without food for a number of days, but by about the 10th day, in spite of parenterally administered fluid, sugar, protein, and blood, he will suddenly fade away to the point of no return. Hunger is expressed by more ways than a cry. When a baby sucks his fist after operation food may be started carefully. The average infant smiles at about 6 weeks—the first and all-important mark of differentiation between man and animal. When a baby above 6 weeks of age smiles following an operation he is ready for a full tray. The adult patient may loathe food and yet smile bravely because her surgeon looks so attractive in his white coat.

Diagnosis.—From study and observation, mostly the latter, the pediatric surgeon must be able to tell when a child is dangerously ill. The only guides are the story of the mother, with her interpretation of what she thinks is important, and the clinical examination. He must develop that elusive clinical judgment that is the mark of the experienced clinician who, after careful observation of a patient, a look at the tongue, and a feel of the pulse, can in some magic sort of way give an accurate appraisal of the patient's condition. The sick infant who merely whimpers when examined is in danger of early death. The child who screams vigorously when touched frightens the parents more that the physicians. So long as there is strength to yell the outlook is not too bad. Studied moods have not developed in a child. He is sick and unhappy and looks just that way in direct ratio to the seriousness of his ailment. Even an infant has characteristic facial expressions. Nausea in a 10-day-old infant is unmistakable. Instead of sucking his tongue or fist he opens his mouth, moves his tongue about as though to spit out something, and restlessly moves his head from side to side.

Preoperative and Postoperative Care.—Preoperative and postoperative care are far more demanding in a child than in an adult. Signs of dehydration—red tongue and lips, and skin that when pinched slowly flattens out instead of springing back—are well known. Simple observation of the dehydrated child will tell with a fair degree of accuracy what kind of fluid and electrolytes are needed, but laboratory control is essential. There still is a tendency to give too much saline solution parenterally. Correction of acidosis or alkalosis is a demanding challenge. If the sick infant is given what he needs, within 12 hours he will have changed from a seemingly irretrievable, semiconscious bit of shrivelled humanity into a wide-awake, acceptable-looking member of the human race.

Obstruction of the respiratory passages after operation is one of the commonest causes of death in infants. Vomiting is hazardous not only on the day of surgery but especially when feeding is started. The weakened infant who is allowed to lie flat on his back, unattended, after feeding is in real danger. In case of regurgitation he cannot turn on his side or snap on the call light or shout, "I'm going to vomit." The trachea becomes occluded so the child cannot even cry. In a moment he has drowned. Respiratory obstruction by mucus, blood, or edema is likewise a constant problem, especially after thoracic surgery. Oxygen demands of a young child are twice those of an adult because of increased metabolism. The sick infant breathes rapidly and shallowly, often having no more than 10 to 20 cc. of air exchange with each breath. Even partial obstruction of its respiratory passages may be rapidly fatal. The pediatric surgeon must have at hand an emergency kit containing laryngoscope and suction catheters and must be able deftly to clear the air passages at the first sign of respiratory distress. In many children the postmortem diagnosis has been status thymicolymphaticus when the real cause of death was suffocation.

Special Aspects of Children's Lesions.—Let us look at one surgical problem of infants and children: inguinal hernia. About this subject the surgical resident must learn, after he has completed his general surgical train-

ing, that one does not make a diagnosis of hernia in a child by thrusting a finger in the external ring; that one can palpate a thickened cord and recognize the feel of the silky surfaces of the hernial sac rubbing against each other; that a hydrocele in a child beyond infancy is almost invariably associated with a hernia; that a hydrocele of the cord in a 3-month-old baby will often disappear without treatment; that an established inguinal hernia in a child almost never is cured spontaneously or with the aid of a truss; that a hernia is six times more apt to become incarcerated during the first six months of life than in any other similar period; that operative repair is indicated at any age, if the child is otherwise well; that a transverse incision for hernia in the suprapubic fold will heal better than the usual oblique incision; and that a simple removal of the sac and nothing more cures 99.5% of inguinal hernias in infants and children. All that must be known about one simple problem.

OPERATION

The operation itself demands much of the pediatric surgeon. Preoperative medication must be adjusted all the way from 0.001 grain (0.06 mg.) of atropine for an infant with pyloric stenosis to an adult dose of morphine for a vigorous 12-year-old child. A skinny but healthy and active 5-year-old child weighing 30 lb. (13.6 kg.) has a high metabolic rate and will tolerate $\frac{1}{12}$ or even $\frac{1}{8}$ grain (5 to 7.5 mg.) of morphine properly balanced with scopolamine. In fact, he will tolerate such a dose of opiates better than a sluggish, 70-year-old, arteriosclerotic man weighing 200 lb. (90.7 kg.). It is merely a difference in metabolism.

Psychic Preparation.—Although preoperative medication is important in relieving a child's anxiety, it does not take the place of psychic preparation for surgery. One should tell the child what is going to happen in words that he can understand. The amount of cooperation one gets is surprising. A 9-year-old boy who was admitted for a patent ductus arteriosus operation said, "Just tell me exactly what you are going to do and I won't be nervous." Another boy 7 years old was admitted for herniotomy. He was lying in bed scared and inarticulate because of spasmodic sobbing. After long conversation the truth finally came out. This boy's playmates, also of the same savage age, had told him that he would be put to sleep with some "awful-smelling stuff" and then the surgeon would cut him to pieces. He had to be taken to see other children who had been operated on before his fears were dispelled.

Anesthesia.—Anesthesiology as a specialty is suffering with labor pains and will have to do a lot more bearing down before anesthesia in infants and children is brought forth as a healthy member of the surgical profession. Concurrent with the development of pediatric surgery will inevitably come better anesthesia for infants and children. Spinal anesthesia has no place in children's surgery. Intravenously administered thiopental (Pentothal) sodium is too dangerous except in the most skilled hands, and curare should be given back to the Indians. For all but intrathoracic procedures nothing compares in safety with open administration of ether with a tube constantly feeding oxygen beneath the mask.

Technique.—The actual technique of operating on a baby will not be mastered by operating on rabbits, although it will help. Gentleness in handling fragile tissues must be mastered, and the feather touch is essential. The resident who sponges so heavily that the whole baby shakes might well shift his interest to general carpentry. Sutures of 4 zero and 5 zero silk and 3 zero or 4 zero surgical gut are as strong as the tissues with which the pediatric surgeon will deal. Many of the instruments found in any operating room can profitably be modified to fit the miniature job they are supposed to do.

The importance of fluid and blood during operation is well known. No operation of any magnitude should be done without a blood transfusion. An infant may not require more than 50 to 75 cc. of blood, but that amount is the difference between success and failure. Often the greatest problem is to get the blood into the child. For this a "cut down" on a vein, usually the saphenous vein at the ankle, is necessary. To find the tiny vein and place a plastic tube in it is a real test of skill. The ratio of congenital absence of the saphenous vein is inversely proportional to the experience of the surgeon. The temptation to proceed with an operation after failure to cannulate a vein must be overcome. Often the cannulation will require more time and energy than the operation itself.

With few exceptions, abdominal operations in infants and small children resemble those in adults only in that both are in the same body cavity. For example, at the Children's Memorial Hospital no child up to 13 years of age has ever been seen with cancer of the colon and only one 4-year-old boy with a peptic ulcer has required surgery. The percentage of the small intestine that can be resected safely in an infant is far less than in an adult, because the fast growing child needs more food-absorbing surface. An infant's intestine is only about 10 ft. (305 cm.) long, and an infant cannot part with more than about 15 in. (38 cm.) and live. One could go on indefinitely about the differences between preoperative, operative, and postoperative care in children and in adults. A child with a surgical lesion is not, by far, just a small person.

TRAINING

In the past pediatric surgeons grew up like Topsy. Men trained themselves by the trial-and-error method. Now that facilities for formal training are available it seems proper that they should be used. Much has been learned during the past 15 years, and it is appropriate to pass on this information by means of formal resident training, as is done in other branches of surgery. How much training is necessary and/or desirable is still disputed, but the general consensus is that after a man has had the usual three year residency in surgery he should take one or one and a half years of pediatric surgery in a children's hospital that has an organized surgical service. Training in pediatric surgery alone for a three or four year period seems unwise. Nothing will take the place of general surgical training. How can a pediatric surgeon deal wisely with congenital atresia of the bile ducts if he has never operated on a gallbladder or explored a common duct? And how can he know what to do with the rare peptic ulcer in a child if he has never contended with the ulcer problem in adults?

Pediatric surgery does not ask for a separate board of certification at this time. The candidate should be certified by the American Board of General Surgery. Those who have had adequate training in pediatric surgery should be admitted to a special examination in that specialty and, on passing, should be given an added certification as a qualified pediatric surgeon.

FUTURE OF PEDIATRIC SURGERY

To the question whether there is a need for pediatric surgery the answer is, emphatically, yes. A child is entitled to the refinements of surgical service that are available to other persons. It sometimes seems as though small children, especially newborn infants, do not receive the same consideration given those who have been about a bit longer. One occasionally hears this comment following an unsuccessful operation: "The baby died—it was only a few days old." It would seem logical that a child should receive as much consideration as, if not more than, a 75-year-old person. The little girl 4 years old, with dancing eyes and quick conversation, has a much stronger hold on the heart strings than the weasened, mewling, 6 lb. infant who is gesticulating aimlessly with his hands and legs and unable to focus his eyes. Admittedly, human nature reacts more strongly to the child in whom an individual personality has developed, but the tiny infant deserves the same chance to live. He is here; all of life is before him, and, if he needs surgical care, he is entitled to the best.

Pediatric surgery as a specialty will develop in the future because of demand. The family physician does excellent obstetric work and has done a creditable job in this field for hundreds of years. Nevertheless, the specialty of obstetrics developed because some mothers for one reason or another needed that extra bit of help available only from those especially equipped to give it. There ensues no unpleasant reflection on the family physician, any more than recognition of a pediatric surgeon reflects unfavorably on the general surgeon. Pediatric surgery is surgery of an age group. Bleeding from the intestine during infancy and childhood presents an entirely different problem from that of the same lesion in adulthood. Recently, a well trained proctologist from a large institution visited our hospital to talk over operations for atresia of the rectum. He explained that as a proctologist he was expected to operate on infants with this deformity. He frankly admitted that he had never seen such a case. Surgery of a segment of the body or a specific region does not seem to be the answer to better surgical care of children. In some specialties such a division is satisfactory, in others not.

Improvement in the care of surgical diseases of the early age group will be attained only by recognizing that these ills are different and require special care. Progress is being made. Large children's hospitals and universities with big pediatric divisions are beginning to realize the importance of a recognized head of pediatric surgery who gives all his time to this specialty. The method of rotating general surgeons on the pediatric surgical service every few months is slowly falling into disrepute. The infrequent occurrence of many surgical conditions peculiar to children—especially congenital deformities—makes it impossible for one to become skilled in their care during his short terms of service. Furthermore, the busy general surgeon cannot afford to neglect his adult practice while he is "on service." Consequently, he has time to go to the children's hospital only for an hour or two a few days a week. If the children's hospital is part of a large general hospital the problem of time is less vexing. Perhaps all children's hospitals should be integrated into large hospital centers. There are many questions in the problem of how to improve pediatric surgery to which nobody can possibly give a glib, all-inclusive answer. On this one point all agree unanimously and wholeheartedly: we want the best possible care for our children.

The rewards of children's surgery are great. Interesting and unusual problems that tax one's ingenuity constantly present themselves. The satisfaction of helping a child lies in the fact that he simply accepts one's services at face value with no thought of indebtedness. He was sick, had pain, and was unhappy, and now he can laugh and run and play. Parents often expect miracles but are grateful for the best that can be given by a mere human being. They want their children to be normal and like other children. The love of a mother for her child goes beyond selfish interest. More than once mothers have spontaneously said after a fatal outcome following hoped-for life-saving surgery, "I suppose you would like a postmortem examination. Perhaps you can learn something that will help another child." Before such words one stands in awe.

Pediatric surgery as a specialty is constantly fascinating and tremendously rewarding. It is broad enough to interest the worker, difficult enough to satisfy the ambitious, and new enough to stimulate the imagination. The infant with "no language but a cry" and the child with no words but a desire to be happy ask that we make available to them the benefits of increased knowledge of their surgical diseases.

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Emotional Illness.—The concept that a doctor needs to know how to treat the functional case as well as the organic case still needs to be emphasized; and this is a radical departure from medical traditions of the recent past. The importance of treating a syphilitic infection very early is well accepted. Generally it is not because the patient is actively or seriously ill at the time, but because we are all too familiar with what will happen many years later if the patient is not treated. We do not take nearly as seriously the first-stage symptoms of an emotional disorder which later on can develop into a chronic psychosis, or antisocial behavior, or a seriously disturbed patient who passes his or her neuroticism on to future generations. . . . The average medical graduate, even after internship and residency, does not know how to treat the patient with an emotional disorder. He has not been trained to do so, even though it has been repeatedly estimated that approximately one-half of all the patients who visit doctors' offices do so because of emotional rather than organic troubles. . . . Doctors in general consider it a disgrace to miss an organic lesion, but somehow do not seem to mind so much missing a functional disorder. Often this will be justified by the attitude, "You can do something for the patient with an organic disease, but little or nothing can be done for the patient with an emotional disorder." Sometimes one hears the mistaken notion that people do not die from psychiatric illnesses. Actually much more can be done in the treatment of the psychoses or psychoneuroses than can be done to cure multiple sclerosis, polio, and many types of heart disease.—N. Q. Brill, M.D., Solving the Problems of Emotional Illness, *Mental Hygiene*, October, 1954.

ROLE OF HEREDITY IN THE PROBLEM OF HYPERTENSION IN INDUSTRIAL WORKERS

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The exact role of heredity in hypertension has not been evaluated satisfactorily. Page [1] has said: "Perhaps much of the diversity of opinion regarding the importance of heredity in hypertension is due to lack of care in defining what is meant by a 'positive family history.'" He believes that the family history is positive in most cases of essential hypertension and quotes a penetrating analysis of the problem by Platt: "Briefly stated, his data, which should be extended, is in accord with the view that essential hypertension is a dominant trait. A positive family history in a patient with hypertension suggests, with a 6:1 probability, that the process is essential. A negative family history indicates with only 3:1 probability that the hypertension is secondary, due most often to renal disease." It would appear, therefore, that when there is a positive family history it is more likely that a case of hypertension in the family will be essential rather than secondary. On the other hand, where a family history is negative, it is more likely that hypertension will be secondary rather than essential.

Ayman [2] stated: "The results presented show that there is an unusually high incidence of elevated blood pressure readings in the children, brothers, sisters, and parents of subjects with arteriolar hypertension, as compared with similar relatives of subjects with normal blood pressure. These results are strong evidence for the existence of a hereditary factor in arteriolar (essential) hypertension." Janeway [3] summarized that "figures suggest a subordinate and accessory influence of inheritance for the majority of patients with hypertension." Ciocco [4] recorded that "almost 29% of the fathers and 31% of the mothers of the men who died from cardiovascular diseases also died from these causes as compared to 23 and 26% respectively of the fathers and mothers of men who died from other causes." Søbye [5] found in his study that the percentages did point to the importance of family history in hypertension, since the prevalence of hypertension among the relatives studied was much greater than what might be expected if hereditary factors did not play a part in the development of hypertension. Feldt and Wenstrand,[6] on the other hand, state: "The incidence of familial cardiovascular diseases was only slightly greater among hypertensive persons than it was among persons with normal blood pressure. . . . It appears unlikely that heredity is of primary importance in the etiology of hypertension."

Some of the observations reported have been obtained from hospital records that must be weighted in favor of positive histories due largely to the ritual of asking leading questions. On the other hand, the data obtained from insurance examinations tend toward the negative results because of the not uncommon practice of applicants to conceal unfavorable information. Essential hypertension is a benign or malignant disease of uncertain clinical course as well as uncertain cause. The disease is considered benign in those patients whose course is slow and unprogressive. The malignant stage is marked by a rapidly downhill course. Papilledema is usually present. Keith and Wagener [7] in 1928 first studied the progress of persons with essential hypertension based on the changes in the optic fundi. Acquired (secondary) hypertension may be due to any of the diseases of the heart, adrenals, or kidneys, such as genitourinary obstruction, infections, anomalies, or diseases of idiopathic origin.

About 5% of the adult population of the United States is said to be affected with essential hypertension. Other authors have reported a higher figure.[9] Although much has been written lately about the incidence of pheochromocytoma, these cases constitute, statistically at least, a minor problem. As evidence in support of this statement, Alvarez [10] states that, at the Mayo Clinic, with its 140,000 patients a year, only 25 cases to date have been diagnosed and treated surgically. The problem of essential hypertension is one of major importance, particularly to industry, owing to the selection of applicants for employment, job placement, medical follow-up, and the rendering of advice as to proper therapy. The medical division of E. I. duPont de Nemours & Company is well aware of this problem, and the present study was undertaken in an effort to clarify some of its aspects. An example of the need for the study of family history in industry stems from an observation made in this company over a 13 year period. In 1940 three chemists were interviewed. All three were followed carefully for a 13

From the medical division of E. I. duPont de Nemours & Company, Inc.

The tables used in this study were prepared with the assistance of the Department of Biostatistics, University of Pittsburgh, Graduate School of Public Health, and are based on a mutual investigation with that institution.

Dr. Shermer Stradley, of E. I. duPont de Nemours & Company, assisted in obtaining the case histories.

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4. Ciocco, A.: Cardiovascular Diseases Mortality in a Sample of White Males and Their Parents, Human Biol. **13**: 350-362 (Sept.) 1941.

5. Søbye, P.: Heredity in Essential Hypertension and Nephrosclerosis: A Genetic-Clinical Study of 200 Propositi Suffering from Nephrosclerosis: Dissertation, Copenhagen, 1948; abstracted, Biol. Abst. **24**: 1660 (July) 1950.

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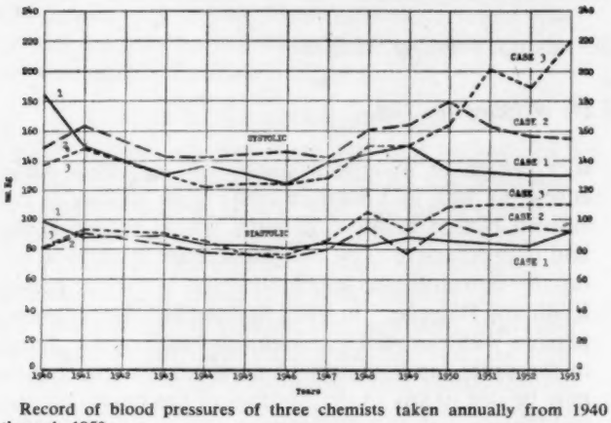
8. Deleted in proof.

9. Morsell, J. A.: The Problem of Hypertension: A Clinical Review of the Literature Dealing with Its Extent: A Symposium on Essential Hypertension: An Epidemiological Approach, Boston, Wright & Potter Printing Co., Legislative Printers, 1951, p. 38.

10. Alvarez, W. C.: Diagnosis of Angina Pectoris: The Master Two-Step Test, editorial, Mod. Med., p. 78, May 15, 1953.

year period by the same physician. They shall be referred to subsequently as cases 1, 2, and 3. The blood pressure data for the three chemists are recorded in the figure.



Record of blood pressures of three chemists taken annually from 1940 through 1953.

REPORT OF CASES

CASE 1.—One chemist, the "riskiest" of the three, had an initial blood pressure reading of 184/100-98 mm. Hg in 1940, but in 1953 the readings were normal. There was nothing in the medical, psychiatric, environmental, or work histories to explain the change. It is, however, interesting and informative to see what the family histories showed 13 years ago as compared with the present time. It would appear that the only means by which the course of events could have been foreseen was by a careful study of the family histories.

Family	1940	1953
Father	Age 51, alive and well. (Turned down for insurance after examination in his teens because of slight elevation of blood pressure; now normal)	Age 64, alive and well
Mother	Age 49, alive and well, except for low blood pressure	Age 62, alive and well
Brother	Age 20, alive and well	Age 33, alive and well
Children	One child, alive and well	Four children, alive and well

CASE 2.—This chemist, who might have been turned down because of high blood pressure, showed, at the end of the 13 year period, no essential change in systolic or diastolic readings.

Family	1940	1953
Father	Age 69, alive and well	Died in 1953, age 82, of "carcinoma of prostate"; no history of hypertension
Mother	Age 77, alive and well	Age 90, in good physical condition for her age. (Poor vision, arthritis)
Sister	Age 34, alive and well	Age 47, alive and well
Children	None	None

CASE 3.—The "ideal" candidate from a physical viewpoint, with an initial blood pressure reading of 138/84-80 mm. Hg, this chemist now has malignant hypertension, with readings varying between 250-200/112-110 mm. Hg. The family histories are summarized below.

Family	1940	1953
Father	Died in 1939, age 65. History of high blood pressure and "strokes." Cause of death was lymphosarcoma	Deceased since 1939
Mother	Age 71; alive, high blood pressure; several "strokes"	Died in 1949, age 79, of high blood pressure and "stroke"
Brother	Age 40, alive and well	Age 53, alive and well
Sister	Age 32, alive and well	Age 45, has high blood pressure
Children	Three children, alive and well	Three children alive; two are well, one has high blood pressure

11. Feldt, R. H., and Wenstrand, D. E. W.: The Cold-Pressor Test in Subjects with Normal Blood Pressure: Report of Observations on 350 Subjects, with Special Reference to Family History, Am. Heart J. **23**: 766-771 (June) 1942.

COMMENT

We have not used the cold pressor test since Feldt and Wenstrand [11] have reported that no relationship exists between the results of this test and a family history of hypertensive cardiovascular disease. It is our belief that the preventive approach to the problem has been overshadowed by the heroic efforts to find a therapeutic cure. It has aptly been said that "there is no treatment now known that constantly and completely reverses the course of hypertensive vascular disease." [8] Modern treatment aims at treatment after the fact, whether by diet, drugs, or surgery.

Seven hundred ninety-nine duPont company employees 40 years of age and over were selected at random, confining the sample to those persons employed at either the duPont or Nemours buildings in Wilmington. No restriction was made as to the number of years of service. It is the policy of this company to give a preemployment physical examination and an annual examination, which consists, in employees who have reached the age of 40, of a complete physical examination, complete blood cell count, Kahn test, chest roentgenogram, electrocardiogram, urinalysis, Keystone eye test, audiogram, and

TABLE 1.—*Hypertension in Employees, by Cardiovascular Disease Status of Parents*

Presence of Cardiovascular Disease in Parents *	No. of Employees: With Hypertension	No. of Employees: With No Hypertension	No. of Employees: Total	Percentage of Employees with Hypertension
In both	26	88	114	22.81
In father	47	157	204	23.04
In mother	48	112	160	30.00
In neither	60	261	321	18.69
Total	181	618	799	Av. 22.65

* Includes those persons who died of cardiovascular disease and those who are alive and have the disease.

other indicated tests. Thus, progressive or constant changes in blood pressure, with eyeground and electrocardiographic correlation, were available, in many instances dating back from 5 to 25 years. All of these employees were available for additional study and questioning when necessary. All were of an intelligence level that made for as good a history as is practical to obtain. Other reports, dealing with the effect of many other variables and possible factors based on a continuation of the questionnaire, are in preparation for future publications.

The data with respect to family history are presented in tables 1 and 2. It will be noted from table 1 that when the mother alone had cardiovascular disease, 30% of the employees had hypertension; whereas, when both parents had the disease, or just the father alone, only 23% of the employees had hypertension. Among the employees neither of whose parents had cardiovascular disease, only 19% were classified as hypertensive. An attempt was made to obtain information about the grandparents and about the siblings of the employee. Only the data on the latter could be analyzed, since the cause of death was unknown for most of the grandparents. With respect to the siblings, the findings are summarized in table 2. Here it is seen that the prevalence of cardiovascular diseases in siblings increases as one goes from families in which neither parent had cardiovascular disease to those in

which one parent had it and finally to those in which both parents had it. Another point to be noted in table 2 is that the proportion of siblings with cardiovascular disease decreases with increasing family size. This finding, representing a "dilution" of effect, is consistent with some unpublished analyses.[12]

We are cognizant of inadequacies in these data. The differences among the percentages in tables 1 and 2 can be tested for significance by using a refined form of the chi-square test; however, a test of significance should not be applied unless the data are collected so that they satisfy the assumptions required in the test. The assumption here is that the groups are comparable and differ only in the factors under study, other differences arising only because of chance or sampling variation. The fact that the percentage of employees with hypertension is lower when both parents had a cardiovascular disease (table 1) than it is when either parent had a cardiovascular disease throws doubt on the validity of this assumption in this set of data. In table 2, which gives the data for all siblings, the higher rate for both parents is evident. This analysis suggests that knowledge of the employees' family history is essential for an understanding of the factors influencing the employees' health. Such knowledge could be of considerable practical value in such matters as job placement in relation to the present and future physical capacity of employees. It is with this thought in mind, as well as the hope of being able to throw more light on possible genetic mechanisms in relation to hypertension, that a section on family history has been added to a revised history form now used in our company. It will concern itself, in addition to other items, with detailed knowledge of family history obtained at the time of employment. It is planned to code this history and to report on an additional study of this problem at a future date.

TABLE 2.—*Prevalence of Cardiovascular Disease Among Siblings, by Size of Sibships and Cardiovascular Disease Status of Parents*

Size of Sibship	No. of Siblings: Neither Parent with Cardiovascular Disease — With Disease	Total	Rate/1,000	One Parent with Cardiovascular Disease — With Disease	Total	Rate/1,000	Both Parents with Cardiovascular Disease — With Disease	Total	Rate/1,000
1	7	53	132.08	18	56	321.43	5	16	312.50
2	17	138	123.19	34	170	200.0	13	52	250.0
3	22	174	126.44	25	171	146.20	13	75	173.3
4-6	50	551	90.74	69	606	113.86	15	150	100.0
7-14	11	203	54.19	36	364	98.90	11	88	125.0
Total	107	1,119	95.62	182	1,367	133.14	57	381	149.61

SUMMARY

Family history is an important factor associated with the prevalence of hypertension. In those persons studied whose parents, particularly the mother, were known to have cardiovascular disease, the prevalence of high blood pressure was greater than in those employees whose parents did not have cardiovascular disease. This finding suggests that a knowledge of family history might be of practical value in such matters as job placement in relation to the present or future physical capacity of employees and in the follow-up, modification, and possible prevention of this important problem. Susceptible employees should be spotted before the onset of hypertension and attempts made to modify or prevent the processes thought to be contributing factors.

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12. Department of Biostatistics, University of Pittsburgh, Graduate School of Public Health: Personal communication to the authors.

LARGE-SCALE ADMINISTRATION OF VACCINES BY MEANS OF AN AUTOMATIC JET INJECTION SYRINGE

Joel Warren, Ph.D., Washington, D. C., Frank A. Ziherl, Arthur W. Kish and Louis A. Ziherl, Cleveland

The injection of fluid substances through the human skin by means of a small jet at high pressure was shown to be feasible nearly 20 years ago.[1] Since then several types of mechanical instruments have been devised that use this principle in the administration of certain biologicals. High pressures have been obtained by means of springs, solenoids, compressed air, carbon dioxide, or small explosive charges and with nozzles of various diameters. A wide variety of materials in volumes up to 1 ml. or greater have been inoculated by jet injection, including insulin, pituitary extract (Pituitrin), sulfones, antibiotics, vitamins, and anesthetics. These are described at length in the reports of Hingson and Hughes,[2] Hirsh and co-workers,[3] Hughes, Jordan, and Hill,[4] and Hingson and Figge.[5] The studies of Batson, Wall, and Landy[6] first demonstrated the feasibility of administering a vaccine (typhoid) by jet injection.

There are certain aspects of jet injection that make the procedure potentially useful in many military or civilian medical situations that require immunization or medication of large numbers of persons in a short time. The vaccination of recruits at an induction center or embarkation point or the prophylactic administration of

1. Lockhart, M. L.: U. S. Patent Application no. 69,119, March 16, 1936.

2. Hingson, R. A., and Hughes, J. G.: Clinical Studies with Jet Injection: New Method of Drug Administration, Anesth. & Analg. **26**: 221, 1947.

3. Hirsh, H. L.; Welch, H.; Millof, B., and Katz, S.: Administration of Penicillin and Streptomycin by Means of the Hypospray Apparatus (Jet Injection): Absorption, Toxicity, and Stability, J. Lab. & Clin. Med. **33**: 805, 1948.

4. Hughes, J. G.; Jordan, R. G., and Hill, F. S.: Jet Injection of Pediatric Practice, Pediatrics **3**: 801, 1949.

5. Hingson, R. A., and Figge, F. H.: A Survey of the Development of Jet Injection in Parenteral Therapy, Anesth. & Analg. **31**: 361, 1952.

6. Batson, H. C.; Wall, R., and Landy, M.: Active Immunization Against Typhoid with the Hypospray Jet Injector, abstracted, Bact. Rev. **49**: 100, 1949.

typhoid or tetanus vaccine in flooded or devastated areas might be cited as examples.

These applications are based on the following features of jet injection. Jet injection is a rapid procedure and does not require any special skills of the operator. Since sterilization of the nozzle between injections is not necessary, inoculations can be given as fast as the recipients can be presented to the operator. Since no hypodermic needle is required, chances of contamination of the instrument by the recipient are lessened, and the accidental transmission of such infections as malaria or infectious hepatitis is minimized. With nozzles of the proper size and the appropriate range of pressures, jet injection is a relatively safe procedure. On the basis of experiments with cadavers, dogs, and human subjects, Figge and Barnett [7] conclude that it is difficult to deliberately penetrate a vein with fluid jets, and these authors believe that the inadvertent injection of material into a vein is less likely with jet injection than with a needle. Accuracy of the delivered dosage is within the limits reported by Hingson and Figge [5] to be obtainable with needle and syringe. They found that as much as 10 to 17% of the intended dosage may not be delivered with the conventional needle and syringe. Although not painless, in the majority of persons jet injections cause less pain than the equivalent dose administered by needle. An appreciable number of persons report no pain at all. In the case of typhoid vaccine inoculated by jet injection the antibody response is equal to or better than that obtainable with subcutaneous inoculation by needle and syringe.[6] The dispersion rate of radioactive-labeled iodine in the body has been found to be more uniform when it is jet injected than when it is injected by needle,[8] and this may well hold for other materials.

There are also certain disadvantages of jet injection. Slight bleeding from the inoculation site is somewhat more frequent than when the hypodermic needle is used; erythema and transient local edema are slightly more pronounced. Solutions containing particulate matter, as penicillin–aluminum-monostearate combinations, have been reported to be traumatizing when injected as a jet.[9] If jets of a diameter larger than 0.006 in. are used, the likelihood of trauma is greatly increased. The recent study by Coon and others [10] illustrates several types of lesions produced by jets of 0.006 to 0.01 in. However, these authors only experimented on the rabbit, whose cutaneous tissues are less resistant to penetration than those of a man, and the high incidence of jet lacerations, 9 of 32 injections, reported has no parallel in any reported human studies and is probably due to twitching or tremors of the rabbit skin. Intramuscular or other forms of deep injection are not possible, nor can viscous or oily suspensions be readily administered. Cutting of the epidermis may occur if the jet is permitted to slip or move during injection. This drawback has been fairly well eliminated by the use of rubber friction cups that surround the nozzle and prevent slippage on the skin.

7. Figge, F. H., and Barnett, D. J.: Anatomic Evaluation of a Jet Injection Instrument Designed to Minimize Pain and Inconvenience of Parenteral Therapy, Am. Practitioner 3: 197, 1948.

8. Bauer, F. K.; Cassen, B.; Youtcheff, E., and Shoop, L.: Jet Injection of Radioisotopes: Clinical Study Comparing Needle and Jet Injections of I_{131}, K_{42}, and Na_{24}, Am. J. M. Sc. 225: 374, 1953.

9. Hingson, R. A.: Personal communication to the authors.

10. Coon, W.; Hodgson, P., and Hinerman, D. L.: Fundamental Problems in Jet Injection, Am. J. M. Sc. 227: 39, 1954.

MULTIPLE DOSE, AUTOMATIC JET INJECTOR

About four years ago the Army Medical Service Graduate School, at the request of the Commission on Immunization of the Armed Forces Epidemiological Board, undertook the development of jet injection equipment specifically intended for rapid semiautomatic operation in large-scale immunization programs. Until this time all jet injection syringes had been designed for the administration of a single dose of inoculum from prefilled cartridges or capsules, manufactured of either metal, glass, or rubber. Between each "shot" it is necessary to remove the empty container and insert a filled cartridge by unscrewing and replacing the nose of the apparatus. The most widely tested type of units use a piston to express the fluid from the ampul and a powerful metal spring or gas accumulator to drive the piston forward. Between each injection it is necessary to compress the spring by means of a mechanical screw, which is operated by hand. Although they are satisfactory for the inoculation of single doses of medicaments, the design of these earlier devices makes them unsatisfactory for use in mass vaccination. The instruments are slow to refill and tiring to load, and it is impossible to perform a large number of injections at a rate comparable to that obtained with the hypodermic needle and syringe method.

As a result of the Army Medical Service Graduate School studies, a series of jet injection syringes has been devised that embodies the following characteristics. 1. The unit is capable of automatically cocking the spring between each "shot"; this is accomplished by an electrically driven hydraulic pump. 2. The dosage chamber does not require changing between each inoculation but is automatically reloaded from a fluid reservoir attached to the injector. This enables the use of standard bulk glass containers of a biological and eliminates the need for special filling of metal or rubber ampuls. 3. The volume delivered can be adjusted from 0.25 ml. to 1.0 ml., and the initial spring (or jet) pressure is the same for any dosage. 4. Sterilization of all parts that come in contact with the biological is simple and is performed by boiling or autoclaving of readily disassembled stainless steel components. 5. Pumps and syringes are interchangeable, and quick-change fittings are provided for this purpose. 6. The components are engineered for relatively economical manufacture.

DESIGN AND OPERATION

Because the automatic jet syringes are basically different from the older and more familiar single-dose models, a detailed description of their construction and operation is included in this report.

The apparatus consists of two basic components, a pistol-shaped injector and a motor-driven hydraulic pump, connected to each other by means of flexible hose lines (fig. 1). The injector unit consists of an aluminum housing (*A*) containing a spring-driven hollow piston that can be compressed by oil pressure from the pump. Attached to the nose of the injector is a rubber-tipped sleeve (*B*), from the center of which projects the tip of a replaceable

metal nozzle. The material to be inoculated is forcibly discharged through a 0.005 in. hole in the tip of the metal nozzle by forward motion of the spring-driven piston. A neoprene "O" ring is used as a piston ring that can be easily replaced. At the rear of the injector a manually operated filling mechanism (*C*) is provided to permit priming of the hollow piston and ampul with the biological before automatic operation is begun. This filler consists of a hollow sleeve containing a plunger that serves to prime the unit. Once automatic injection is begun, the injector reloads itself with a constant volume. A hypodermic needle (*D*) attached to a side-arm of the filler sleeve can be inserted through the rubber closure of any vaccine vial up to 50 ml. capacity when the vial is placed in the bracket (*E*) on the top of the unit. Check valves at the front of the unit are operated by means of two triggers. Depressing the lower trigger (*F*) cocks the spring by releasing hydraulic fluid under pressure into the injector and forcing back the spring. Depressing the upper trigger (*G*) opens a ball check valve; the hydraulic fluid is released from in front of the spring and discharges the unit. This cycle can be repeated indefinitely. An adjustable sleeve ring at the rear of the unit permits variation of the dose up to a volume of 1 ml. by limiting spring travel and, therefore, the stroke of the piston. The dose delivered is indicated by a graduated scale (*H*) on the side of the injector.

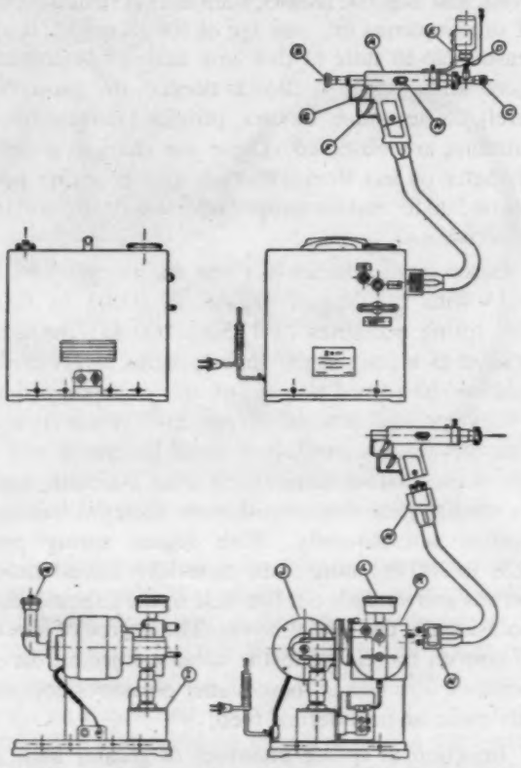

Fig. 1.—Top, assembled injector and pump. *A*, aluminum housing; *B*, rubber-tipped sleeve; *C*, filling mechanism; *D*, hypodermic needle; *E*, bracket; *F* and *G*, upper and lower triggers; *H*, graduated dose scale. Bottom, pump components and hydraulic points of disconnection. *I*, gear-driven pump; *J*, electric motor; *K*, filter; *L*, pressure gauge; *M*, filler cap; *N*, pressure-tight fitting.

The pump unit (shown with cover removed in figure 1, bottom) consists of a gear-driven pump (*I*), electric motor (*J*), and a fluid reservoir. The pump is of the rotary type and forces hydraulic brake fluid through a high pressure hose to the injector unit. Fluid is returned to a reservoir through the low pressure hose. The pump unit is fitted with an oil filter (*K*), pressure gauge (*L*), and filler cap (*M*). The injector can be disconnected from the pump by means of pressure-tight fittings (*N*) at each end of the hose. The pump is housed in a stainless steel case fitted with a carrying handle and a bracket to hold the injector when it is not in use. The entire unit, when fitted into a small chest, weighs 80 lb. Future models may be designed to weigh less.

DISASSEMBLY AND STERILIZATION

Those portions of the units that come into contact with the medicament may be sterilized by boiling the parts in any conventional small sterilizer. To disassemble the injector (fig. 2, top) the nose assembly is unscrewed, the primer pump removed from the rear of the injector by a quarter turn of its locking lugs, and the piston unscrewed through the rear opening by means of a special hollow screw driver (fig. 2, *E*), that also serves as a handle after the piston has been sterilized. Only those parts of the injector unit indicated in figure 2, bottom, require sterilization before use. Before sterilization one nozzle is slipped over the front of the plunger assembly and the hollow screw driver over the rear. A second nozzle is inserted in the rubber-tipped cap, and this is screwed to the base. In this fashion both ends of the piston are covered during reinsertion into the injector.

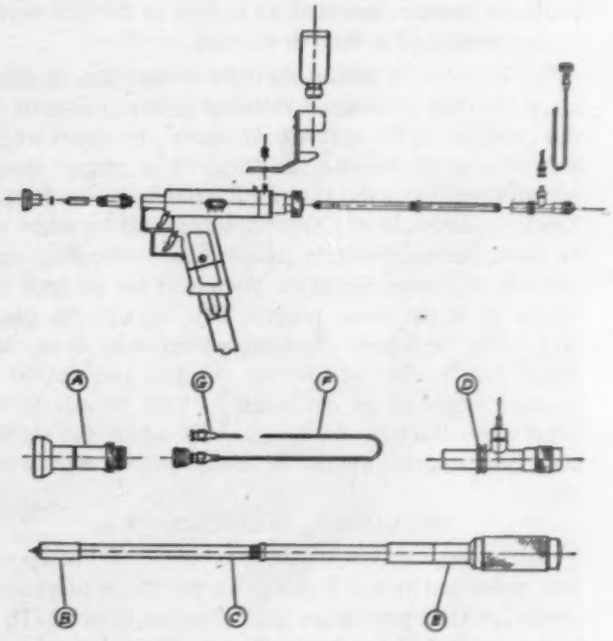

Fig. 2.—Top, disassembled injector. Bottom, injector components requiring sterilization.

To assemble the unit the following procedure is used. The piston is pushed into the rear opening of the injector and screwed tight while it is held by the screw driver handle. The hollow screw driver is then withdrawn. The priming mechanism is inserted in the rear of the injector by slipping the open end of the primer over the rear of of the piston. It is locked in place with a quarter turn

to engage the lugs in the injector body. The nozzle is removed from the front of the piston and the nozzle cap and its contained nozzle placed over the end of the plunger. The nozzle cap is screwed to the injector nose.

The vial bracket is attached to the top of injector housing by removing a knurled nut and placing the slot in the bracket over the stud and replacing the nut. The straight filler hypodermic needle is attached to the tapered nozzle on the top of the priming mechanism. The cap of the biological vial is sterilized with alcohol, and the sterile airway is inserted into the rubber cap of the vial. The vial is placed in the bracket while it is forced down over the filler needle. The entire operation of assembling the sterile components requires about 90 seconds. A photograph of the entire instrument ready for use is shown in figure 3.

OPERATION

The pump is started, and one waits until the oil pressure gauge registers the correct pressure (2,000 to 2,200 lb. per square in.); this requires about one minute. While the injector is held in the right hand as one would a pistol, the nose of the instrument is elevated slightly and the lower trigger depressed. The indicator (fig. 1, *H*) moves to the rear, where it is automatically stopped at the desired volume, which is preset before operation. The primer at the back of instrument is manually pumped until fluid is emitted in a steady stream from the nozzle. A large sterile test tube or gauze pad placed over the nose of the device prevents spraying during this operation. The unit is now ready for use and reloads automatically between inoculations as long as the filler needle is kept immersed in fluid in the vial.

To inoculate a person the rubber nose cap is firmly placed against a sterilized (alcohol-acetone) area of the skin, and, while the unit is held steady, the upper trigger is depressed, discharging the device. The injector should not be lifted from the skin until completely discharged, which requires about 1 second. Care must be taken not to move the nozzle while injecting, since the fluid jet is capable of cutting the skin. To reload the injector one simply pulls the lower trigger. This recocks the piston and refills the nozzle chamber within 4 to 6 seconds. After each period of use the injector unit should be cleaned promptly by discharging 25 to 50 ml. of distilled water through the device, after which the sterilizable components should be disassembled and wiped clean.

MECHANICAL CHARACTERISTICS

The pump is driven at 250 rpm by a 1/10 horsepower gear reduction motor. It delivers a maximum pressure of about 2,400 lb. per square inch by means of two 3/16 in. pistons with 1/2 in. travel. The injector spring load is 280 lb. per inch, which gives it at full recoil position 3,734 lb. per square inch. The jet velocity at the nozzle is 700 ft. per second with the use of isotonic sodium chloride solution and an opening of 0.005 in. Discharge time for 1.0 ml. is 0.5 seconds and for 0.5 ml., 0.2 seconds.

11. Figge and Barnett.[7] Coon and others.[10]
12. Hingson and Hughes.[3] Hughes and others.[4] Figge and Barnett.[7]
13. Dunne, B., and Cassen, B.: Some Phenomena Associated with Supersonic Liquid Jets, J. Appl. Physics **25**: 569, 1954.

PHYSIOLOGICAL CHARACTERISTICS OF JETS

On the basis of studies in animals and human cadavers,[11] surgical specimens,[7] and living subjects [12] and using a variety of dyes, opaque substances, or biologicals as the injected material, it is now well established that the deposition pattern will vary with a variety of extrinsic factors, such as pressure, jet size and velocity, viscosity of material, and intrinsic factors, such as skin structure, amount of subcutaneous fat, and age of the recipient. It appears reasonable to state at this time that, while considerably more study of jet injection is needed, the procedure will rarely cause undue trauma, provided certain basic precautions are observed. These are the use of jets of a diameter of less than 0.008 in. and of spring pressures below 300 lb. and the proper selection of site and injected material.

Based on the studies of Figge and Barnett [7] and Hingson [9] with the use of orifices of 0.003 to 0.005 in. and spring pressures of 175 to 200 lb., the jet is deposited as a cone in the subcutaneous layers of the skin and the narrowed portion of this cone-shaped deposit will extend back into the dermis. Such relatively low pressure jets usually produce a small indurated bleb at the site of inoculation immediately after injection, and it can be readily seen that considerable material has been deposited intradermally. With higher spring pressures (235 to 280 lb.) more of the material is forced through the dermis and spreads out fan-wise in the subcutaneous and occasionally the fascial layers. The degree of spread will, of course, be related to the volume injected. In our experience injection at these higher pressures does not usually cause an intradermal bleb.

Injection at spring pressures of greater than 280 lb. have not been carefully studied. However, it is our opinion that such jets might cause considerable trauma, in view of the recent demonstration of cavitation produced by supersonic liquid jets when discharged into fluids.[13]

CLINICAL TRIALS

The mechanical characteristics of the automatic unit described were arrived at almost entirely by a series of clinical trials in human volunteers. Early models had insufficient spring pressure, resulting in irregular penetration and leakage. Current design uses the minimum spring pressure that will consistently inject 0.5 to 1.0 ml. of a saline-suspended biological through the skin of an adult and that, to date, has not caused any appreciable trauma in a fairly large series of injections.

Intermittent testing of the automatic, multiple dose unit over the past three years has been performed exclusively with standard U. S. Army triple typhoid vaccine. Minor trials, with small numbers of laboratory personnel, have been continually performed to test various design modifications, but the most extensive and valid studies have been conducted with military inductees at an Army reception center. In the most recent study a total of 1,685 persons were vaccinated daily in groups ranging between 117 and 252. The soldiers simultaneously received typhoid vaccine by jet injection in one arm and the military standard dose of 0.5 ml. of tetanus

vaccine by hypodermic needle (22 gauge) subcutaneously in the other arm. In this manner it was possible to obtain a rough comparison of the immediate pain responses to the two inoculations. One jet injector was used at a time, and the operator was assisted by an orderly who prepared the skin site with alcohol-acetone.

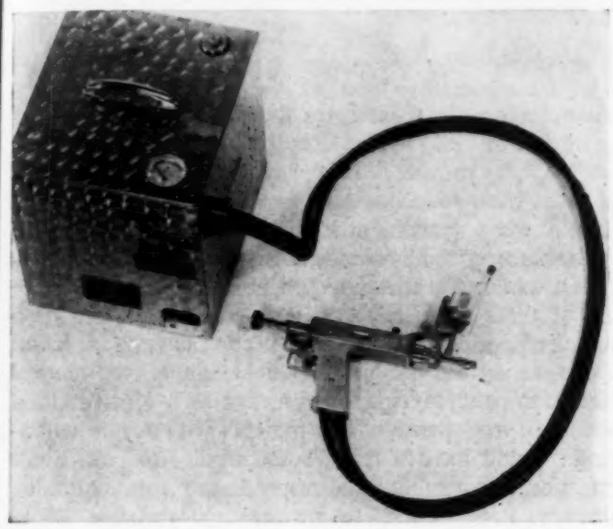

Fig. 3.—Multiple dose, automatic jet injection syringe and pump.

These trials substantiated the original premise of this investigation, namely, that jet inoculation with an automatic, multiple dose unit is feasible and provides a promising method for rapid mass inoculation. Once the injector was assembled and loaded the speed at which men could be inoculated was determined by the rate at which the skin site could be sterilized and a man presented to the operator. After the personnel had become familiar with the unit they easily kept pace with highly trained corpsmen using preloaded hypodermic needles and syringes.

In its present state of development it is not uncommon to have the jet stream fail to penetrate. The highest incidence of failure in any one series of consecutive persons was 9 out of 228. In all but one instance, reloading the jet injector and inoculating at another site on the arm resulted in a satisfactory vaccination. Failure of penetration is immediately apparent and is usually commoner in "tough" skinned, well-muscled men or in persons with considerable hair on the extremities. Higher spring pressures would probably result in fewer "misses" but would also increase the likelihood of trauma in thin-skinned persons, especially in women and children. For this reason, it seems desirable to retain the present spring pressures (235 to 280 lb.) in the automatic unit and to repeat the injection at another site when inadequate penetration occurs.

Bleeding, in the form of a few small drops from the puncture, occurred in nearly 15% of all persons injected with the jet syringe. It was never prolonged and was comparable to that following intramuscular injection through a 21 gauge needle into the gluteus. Pain accompanied the majority of jet inoculations; however, it was invariably less in intensity and duration than the control injection given with a syringe and needle inoculation. No instance of a severe postinjection reaction occurred in any of the 1,685 persons inoculated with typhoid vaccine by means of the jet apparatus. Two men of this group reported to sick call the following morning with the complaint of headache, slight fever, and general malaise. These were considered as the common type of post-typhoid vaccine reaction unrelated to the manner of administration of the biological.

Mechanical failures of two types occurred during these trials. Minor failures consisted of plugged jet openings, usually by small particles of rubber from the punctured rubber cap of the vaccine vials, and worn and leaking "O" rings on the front end of the piston. Both of these difficulties were rapidly corrected by replacement. In fact, these difficulties were anticipated, and the automatic units are so designed that nozzle or "O" ring replacement is a simple procedure. Major mechanical failures requiring overhaul of the unit, in earlier models than the one illustrated, consisted of a fatigue fracture of a spring and a leaking piston ring in the hydraulic system. The present design is not considered as a final one ready for commercial production. The units available at present are the property of the armed services and are for use solely for research and development.

The technique of jet injection and proficiency in the maintenance of the equipment was rapidly and enthusiastically acquired by the hospital corpsmen. About one hour of instruction, with the assistance of oversize diagrams, provided adequate training.

MANUAL JET INJECTION DEVICES

Because numerous situations exist when a single dose jet injection syringe would be of clinical value, as in the administration of insulin, antibiotics, anesthetics, or narcotics, the discharge assembly of the automatic unit has been incorporated into a "single shot" device (fig. 4). This is basically identical with the automatic injector, except that the electric pump is replaced by a lever activated pump. To cock the injector, one repeatedly

Fig. 4.—Single dose, manually operated jet injection syringe.

squeezes the lever by hand until the spring is fully compressed. The nozzle chamber is then manually filled with the desired dose from a metal or conventional glass (Luer type) syringe that is fitted into the rear of the unit. The syringe must be previously loaded from a vial in the usual manner.

Walter Reed Army Medical Center (12) (Dr. Warren).

RELATIONSHIP OF PANCYTOPENIA TO MEGALOBLASTIC ANEMIAS

REPORT OF SEVEN CASES CLINICALLY CONFUSED WITH BLOOD DYSCRASIAS AND SUBACUTE BACTERIAL ENDOCARDITIS

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and
Mercedes V. de Torregrosa, Ph.D., San Juan, P. R.

Since the discovery by Castle and Minot [1] of the role played by substances present in liver in achieving a clinical and hematological remission in pernicious anemia, great advances have been made toward elucidating the metabolic disturbances leading to the production of macrocytic anemias associated with a megaloblastic bone marrow. There is considerable experimental evidence to indicate that folic acid, folinic acid, and vitamin B_{12} are enzymes involved in the manufacture of nucleic acid. The former two act in the early phases to form purines and pyrimidines, which with ribose and desoxyribose form thymidine. Vitamin B_{12} acts at this level to convert thymidine into nucleic acid. A deficiency of any of these factors is capable of producing a megaloblastic bone marrow.[2] Experimentally a megaloblastic anemia has been produced by May [3] and associates in monkeys fed a diet deficient in folic acid and ascorbic acid.

Jones,[4] Davidson, and Mallarme have called attention to the fact that a deficiency of the substances involved in the production of megaloblastic anemia similarly affects the leukocyte and platelet precursors in the bone marrow. The concept was thus evolved that these deficiencies are not only concerned with the erythrocytes, but, rather, that they may lead to a profound metabolic dystrophy of the bone marrow. However, this possibility has not been stressed sufficiently in textbooks or in the literature in general. The finding of leukopenia and thrombocytopenia in the megaloblastic group of anemias is briefly discussed and quickly dismissed. This may be due to the fact that the patient seeks medical aid because of the appearance of symptoms related to anemia and gets treatment before the more dramatic and more serious symptoms related to leukopenia and thrombocytopenia develop.

Ehrenfeld [5] and, later, Strauss [6] have reported cases in which the presence of infection apparently served as the stimulus for extensive myelocytic proliferation of the bone marrow. In these cases the bone marrow showed an intense myeloid hyperplasia that overcrowded the few megaloblasts present. Fairley [7] reported in 1938 a series of cases from Macedonia in which purpuric manifestations were a prominent clinical feature. These cases were characterized by a poor nutritional history, a macrocytic anemia, and thrombocytopenia. It seems plausible that if these deficiency states progress untreated for a sufficient period of time, or if a complicating infection arises during the period of clinical relapse, the clinical picture of pancytopenia, or of ineffectively formed blood elements, might result. The patients with severe leukopenia would have marked susceptibility to concurrent infection and a suboptimal response to proper antibiotic therapy. Patients with severe thrombocytopenia would manifest bleeding tendencies under the skin and from mucous membranes. A combination of both infection and bleeding tendencies might also suggest subacute bacterial endocarditis.

The similarity of the symptoms that might arise from this deficiency state to those of more serious blood disorders, such as aplastic anemia, leukemia, and thrombocytopenic states, is easy to understand. In all of these disorders the function of the blood cells is altered, either qualitatively or quantitatively. The observation of several cases with a clinical picture suggestive of serious and even hopeless blood disorders and characterized by pancytopenia, generalized bone marrow hyperplasia, and a megaloblastic arrest of the erythroid series is the subject of this report.[8] These patients responded promptly to easily available and innocuous drugs, to simple dietary adjustments, and to adjunctive antibiotic therapy.

REPORT OF CASES

CASE 1.—A 30-year-old woman was admitted to the hospital on May 10, 1951, because of fever and sore throat. She had been in good health until about one year before admission, when intermittent bouts of foamy, bulky, nonbloody diarrhea developed. Four weeks prior to admission swelling of the legs and puffiness of the face had been noted. She menstruated profusely for eight days, and this was followed by marked dizziness and weakness. The diarrhea became severer and persisted until admission. She then noticed severe burning of the mouth. Two days prior to hospitalization she had shaking chills, high fever, and a severe sore throat. Her dietary history was fairly adequate; it corresponded roughly to the average, low-income Puerto Rican diet: rice, beans, vegetables, meat once or twice weekly, and codfish. Loss of weight was denied.

Physical examination revealed a well-developed, poorly nourished, pale, acutely ill white woman. Her temperature was 104 F, pulse rate 140 per minute, blood pressure 100/50 mm. Hg, and respirations 32 per minute. There was marked pallor of all mucous membranes and a large retinal hemorrhage in the right eye and three smaller ones in the left retina. Numerous petechiae were present in the hard palate. The tongue was smooth and slightly reddened. Both tonsils and portions of the pharynx were covered by a grayish-white membrane. Small-sized,

From the San Juan City Hospital and the Department of Medicine, University of Puerto Rico School of Medicine.

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soft, and nontender cervical lymph nodes were palpated. The lungs were normal. There was a faint, blowing, apical systolic murmur. The liver was felt five fingerbreadths below the right costal margin; it was soft and slightly tender. The spleen was felt two fingerbreadths below the left costal margin and was firm but not tender. Small axillary and inguinal lymph nodes were also felt.

Laboratory tests on admission revealed a hemoglobin level of 2.4 gm. per 100 cc., 810,000 red blood cells per cubic millimeter, and 700 white blood cells per cubic millimeter, with 20% neutrophils and 80% lymphocytes, and 56,000 platelets per cubic millimeter. Macrocytosis, poikilocytosis, and anisocytosis were present. Results of urinalysis were normal, and the blood Kahn test was negative. A roentgenogram of the chest was reported as normal. A bone marrow study revealed an intense hyperplasia and 7% megaloblasts and many atypical, immature myeloid cells.

The patient was in a critical condition. Three blood cultures were all reported negative. Administration of penicillin, 300,000 units daily intramuscularly, was started on admission. Therapy with liver extract, 5 units daily intramuscularly, was started on the third hospital day. The patient's temperature rose to 104 F daily. Petechiae appeared in the conjunctivas. Two hundred fifty cubic centimeters of whole blood was given on the fifth day; this was followed by a precipitous drop of the temperature curve and by a sense of well-being. A high protein, high vitamin diet was prescribed. From that day on the patient's general condition improved slowly but steadily. A low grade fever of not more than 100 F persisted during the first month of hospitalization. No new petechiae appeared. The exudate in the throat disappeared by the 10th hospital day. The patient's appetite gradually returned, but weakness and lack of vigor persisted. There were two soft, bulky, and yellowish stools daily. Another bone marrow study done 22 days after the institution of liver therapy showed 10% megaloblasts still present. The hematological response was suboptimal during the first month of hospitalization. During the patient's last 10 days in the hospital there was a dramatic improvement. The bowel movements became normal, a good appetite developed, she gained weight, and muscular strength was regained. She was discharged on the 48th day. Two weeks later complete blood studies revealed a hemoglobin level of 11 gm. per 100 cc., 3,890,000 red blood cells per cubic millimeter, and 7,350 white blood cells per cubic millimeter, with 72% neutrophils and 26% lymphocytes (table 1).

The clinical diagnosis on admission was acute leukemia because of the severe pharyngeal infection, the bleeding tendency, hepatosplenomegaly, diffuse adenopathy, and anemia. The glossitis and the gastrointestinal disturbances were correctly evaluated only after the blood smears and the bone marrow had been studied.[9] Although there were 7% megaloblasts, the intense myeloid hyperplasia and the presence of atypical metamyelocytes in the bone marrow were more impressive.[10]

Case 2.—A 19-year-old woman was admitted on May 27, 1952, because of chills and fever. One year prior to admission the patient had delivered spontaneously a healthy male infant. At that time blood studies revealed a hemoglobin level of 11 gm. per 100 cc., 4,110,000 red blood cells per cubic millimeter, and 21,000 white blood cells per cubic millimeter, with 78% neutrophils and 22% lymphocytes. Following delivery, and for economic reasons, the patient's dietary intake had been poor. She continued in good health except for a 5 lb. (2.3 kg.) weight loss. Two weeks prior to admission she noticed slight terminal burning on micturition. One week later a low grade fever, chilliness, and malaise developed, followed in a few days by severe frontal headaches, shaking chills, and high fever. Pain in the right flank, vomiting, and urinary frequency also developed.

Physical examination revealed a well-developed, chronically ill-looking woman, who appeared in toxic condition, febrile, and acutely ill. The patient's blood pressure was 100/50 mm. Hg, pulse rate 120 per minute, temperature 106 F, and respirations 22 per minute. There were two petechiae in both lower eyelids, one on the dorsum of the left foot, and two on the dorsum of the right foot. The patient's tonsils were hypertrophied, with prominent crypt openings; her lungs were normal, and her heart was not enlarged. There was a faint, rough, apical systolic murmur that was not transmitted. The liver was felt two fingerbreadths below the right costal margin. The tip of the spleen was easily felt and was not tender. There was severe pain in the right costovertebral angle. The pelvic examination was normal. Laboratory tests on admission revealed a hemoglobin level of 3.9 gm. per 100 cc., 1,260,000 red blood cells per cubic millimeter, and 2,600 white blood cells per cubic millimeter, with 50% neutrophils and 50% lymphocytes. The urine gave a plus reaction for albumin, contained many bacteria, some pseudocast, 1 or 2 red blood cells per high-power field, and 2 to 5 white blood cells per high-power field. A roentgenogram of the chest and another of the abdomen were both reported as normal. The stools did not contain ova and parasites. A serologic test was negative for syphilis.

Table 1.—*Laboratory and Therapy Data, Case 1*

Hospital Day	Hemoglobin, Gm. per 100 Cc.	Red Blood Cells per Cu. Mm.	White Blood Cells per Cu. Mm.	Neutrophils, %	Lymphocytes, %	Eosinophils, %	Platelets per Cu. Mm.	Reticulocytes, %	Blood Transfusions, Cc.	Liver Extract
1	2.4	810,000	700	..	..	..	.....	...	...	.....
3	3.2	890,000	800	20	80	..	.....	...	...	5 units I.M. daily
5	...	.....	.....	..	..	..	.....	...	250	.....
6	...	.....	.....	..	..	..	56,000	2.9	...	Ferrous sulfate, 15 grains (10 gm.) daily
7	...	.....	.....	..	..	..	.....	2.7	...	.....
8	...	.....	.....	..	..	..	.....	6.6	...	.....
11	4.2	1,590,000	.....	..	..	..	.....	...	...	.....
14	...	.....	.....	..	..	..	.....	8.5	...	.....
18	...	.....	.....	..	..	..	.....	14.0	...	.....
19	3.4	1,170,000	.....	..	..	..	58,000	...	...	.....
20	3.1	1,010,000	.....	..	..	..	.....	...	...	.....
25	4.2	1,430,000	.....	..	..	..	.....	...	...	.....
31	3.6	1,020,000	2,300	50	46	4	.....	...	...	.....
40	5.6	1,780,000	.....	..	..	..	.....	...	...	.....
48	7.8	2,550,000	4,350	18	66	16	.....	...	...	.....
60	11.0	3,890,000	7,350	72	26	2	160,000	...	...	.....

Additional tests before therapy: mean corpuscular volume, 120 cubic microns; mean corpuscular hemoglobin concentration, 30.4%; icterus index, 6.7; Watson bilirubin, direct, 0.36 mg. per 100 cc., total, 0.62 mg. per 100 cc.; prothrombin time, 17 sec. (control 15 sec.); stools, Trichuris trichiura and hookworm ova; gastric analysis (with histamine), low acidity; glucose tolerance test, flat curve; rectal biopsy and stools, negative for Schistosoma mansoni ova; uric acid, 3.9 mg. per 100 cc.

9. Peabody, F. W.: The Pathology of the Bone Marrow in Pernicious Anemia, Am. J. Path. 3: 179, 1927. Lübbers, Von P., and Koch, E.: Über Mark-und Bludrelationen bei alimentären hyperchromen Anämien und bei Pernicosa, Acta haemat. 2: 378, 1949.

10. Schleicher, E. M.: The Volumetric Pattern of Aspirated Normal Human Sternal Marrow, Am. J. Clin. Path. 14: 7, 1944.

Subacute bacterial endocarditis was suspected on admission. Two blood cultures and three blood cultures with penicillinase taken during the first three days of hospitalization were all reported as negative. The urine was not cultured. Penicillin and streptomycin therapy was started with high doses on the second hospital day. In spite of this the patient continued in a critical condition and was delirious during the first four hospital days. A spiking fever of up to 105 F persisted. Blood smears were negative for malaria. On the fourth day a bone marrow study revealed an intense hyperplasia of the myeloid series, many atypical metamyelocytes, and only 4% megaloblasts. Administration of vitamin B_{12}, 30 mcg. intramuscularly every three days, was started. On the fifth hospital day 250 cc. of whole blood was given and antibiotic therapy was discontinued. There was a precipitous drop in the temperature; the patient remained afebrile during the remainder of her hospital stay. Another 250 cc. of blood was given on the sixth hospital day. There was a dramatic improvement; mental alertness and a marked appetite were regained. The patient was discharged on the 12th hospital day on a regimen of vitamin B_{12}, a high protein diet, and vitamin supplements.

Four months later the patient was admitted to the surgical service for a cholecystectomy; the pathological report was "acute and chronic cholecystitis and cholelithiasis." At that time she had a hemoglobin level of 9 gm. per 100 cc. and 11,100 white blood cells per cubic millimeter, with 83% neutrophils, 15% lymphocytes, and 2% eosinophils. One year later the patient was seen at the prenatal clinic. She was five months pregnant and in excellent health (table 2).

This case was suggestive of subacute bacterial endocarditis on admission of the patient. The patient had sought hospitalization because of symptoms of an acute infection, but the antibiotic therapy failed to have any effect on the fever. The bone marrow findings were characterized by an intense myeloid hyperplasia and the presence of atypical metamyelocytes, with only 4% megaloblasts.

Case 3.—A 40-year-old man, a chronic alcoholic, was admitted on April 6, 1953, because of marked weakness and dizziness. During the previous 14 years the patient had been a heavy drinker of alcohol, frequently resorting to denatured alcohol mixed with orange juice. Two years prior to entry he had twice passed tarry stools after drinking sprees, but he did not pay any attention to these episodes. Three months prior to admission the patient decided to stop drinking, and since then there gradually had developed increasing weakness, inability to walk long distances because of severe dizziness, marked anorexia, poor vision, and easily bleeding gums. Three weeks before entry he noticed mild edema of the ankles and inability to stand. He denied burning sensation in the tongue, diarrhea, and loss of weight. For many years his dietary intake had been poor, and at times he had gone without eating for several days.

Physical examination revealed a well-developed, fairly well-nourished, extremely pale mulatto man who was unable to stand up because of weakness and dizziness. The patient's blood pressure was 100/40 mm. Hg, pulse rate 100 per minute, respirations 24 per minute, and temperature 100 F. The conjunctivas were pale. Several petechiae were present in the lower eyelids. Many flame-shaped hemorrhages were seen in both retinal fields. The patient's tongue was pale, and the lingual papillae were smaller than normal. A few shotty posterior cervical nodes were palpated. There were a few moist inspiratory rales in the base of the right lung. The heart was enlarged to the left. The pulmonic second sound was louder than the aortic second sound. There was a faint, blowing pulmonary systolic murmur. The liver was felt three fingerbreadths below the right costal margin and was firm but not tender. The tip of the spleen was easily felt. There were large bilateral hydroceles. A tight scarred phimosis with secondary infection was present.

Laboratory tests at admission revealed 950,000 red blood cells per cubic millimeter, 3.3 gm. per 100 cc. hemoglobin level, and 6,350 white blood cells per cubic millimeter, with 48% neutrophils, 42% lymphocytes, 2% monocytes, and 8% eosinophils. Macropolycytes and macrocytes were seen in the blood smear. The red blood cells showed achromia, anisocytosis, and poikilocytosis. There were 32,000 platelets per cubic millimeter. The

Table 2.—*Laboratory and Therapy Data, Case 2*

Hospital Day	Hemoglobin, Gm. per 100 Cc.	Red Blood Cells per Cu. Mm.	White Blood Cells per Cu. Mm.	Neutrophils, %	Lymphocytes, %	Platelets per Cu. Mm.	Blood Transfusions, Cc.	Vitamin B_{12}
1	3.9	1,260,000	2,600	50	50	.....	...	.....
4	4.2	1,340,000	2,300	18	82	.....	...	30 mcg. I.M. every 3 days
5	...	.....	.....	..	..	.....	250	.....
6	...	.....	.....	..	..	.....	250	.....
7	...	.....	.....	..	..	100,000	...	.....
10	9.0	3,260,000	7,850	63	37	.....	...	.....
90	9.0	.....	11,000	83	17	.....	...	.....

Additional tests before therapy: mean corpuscular volume, 107 cubic microns; mean corpuscular hemoglobin, 31.8 micromicrograms; blood urea nitrogen, 18.9 mg. per 100 cc.; creatinine, 0.77 mg. per 100 cc.; clotting time (Lee-White), 3 min. 30 sec.; bleeding time, 1 min. 11 sec.; sickle cell, negative; stools, negative for ova and parasites; total serum protein, 7.1 gm. per 100 cc.; albumin, 4.2 gm. per 100 cc.; globulin, 2.9 gm. per 100 cc.; malaria smear, negative.

Table 3.—*Laboratory and Therapy Data, Case 3*

Hospital Day	Hemoglobin, Gm. per 100 Cc.	Red Blood Cells per Cu. Mm.	White Blood Cells per Cu. Mm.	Neutrophils, %	Lymphocytes, %	Eosinophils, %	Monocytes, %	Platelets per Cu. Mm.	Reticulocytes, %	Blood Transfusions, Cc.	Liver Extract
1	3.3	950,000	6,350	48	42	8	2	.....	0.5	...	.....
4	...	.....	.....	..	..	..	..	32,000	...	...	.....
5	...	.....	.....	..	..	..	..	.....	...	...	5 units I.M. daily
8	...	.....	.....	..	..	..	..	.....	...	250	.....
11	...	.....	.....	..	..	..	..	.....	5.0	...	.....
12	3.1	1,080,000	9,750	66	34	..	..	.....	8.0	...	.....
17	5.6	1,680,000	12,350	53	42	21	1	.....	...	...	.....
22	...	.....	.....	..	..	..	..	350,000	...	250	.....
24	7.4	2,200,000	.....	..	..	..	..	.....	...	...	.....
31	8.1	.....	.....	..	..	..	..	.....	...	...	.....

Additional tests before therapy: mean corpuscular volume, 116.7 cubic microns; mean corpuscular hemoglobin concentration, 33.1%; bleeding time, 2 min. 16 sec.; Hanger's test, 24 hr. 2+, 48 hr. 2+; stools, negative for ova and parasites and for occult blood; prothrombin time, 18.5 sec. (control 15.33 sec.); serologic test, negative; sulfobromophthalein sodium, 40% retention at 45 min.; total serum protein, 6.9 gm. per 100 cc.; albumin, 3.7 gm. per 100 cc.; globulin, 3.2 gm. per 100 cc.

urinalysis revealed a specific gravity of 1.006, traces of albumin, and innumerable white blood cells. A bone marrow study done on admission was unfortunately unsatisfactory. The reticulocyte count was 0.5%. The patient was placed on a regimen of 5 units of liver extract given intramuscularly daily on the fifth hospital day, a high protein diet, and supplemental orally given vitamins. A chest roentgenogram revealed generalized cardiac enlargement compatible with anemic heart disease.

Results of upper gastrointestinal studies were normal. On the eighth hospital day 250 cc. of whole blood was given. This was followed by a marked improvement in the patient's general strength, and he was able to stand up without help. Gradually a voracious appetite developed, and he soon became ambulant. The low grade fever disappeared. No new petechiae nor retinal hemorrhages appeared. A bone marrow study 17 days after the initiation of liver extract therapy revealed 1% megaloblasts. Liver function studies disclosed severe impairment. The patient was discharged on the 33rd hospital day, after the hemoglobin level had increased to 7.7 gm. per 100 cc., the platelets to 354,000 per cubic millimeter, and the white blood cell count to 12,350 per cubic millimeter, with 53% neutrophils, 42% eosinophils, and 1% monocytes (table 3).

TABLE 4.—*Laboratory and Therapy Data, Case 4*

Hospital Day	Hemoglobin, Gm. per 100 Cc.	Red Blood Cells per Cu. Mm.	White Blood Cells per Cu. Mm.	Neutrophils, %	Lymphocytes, %	Eosinophils, %	Platelets per Cu. Mm.	Reticulocytes, %	Blood Transfusions, Cc.	Liver Extract
1	2.1	980,000	1,900	36	64	..	.....	...	...	.....
3	...	.....	.....	..	..	..	.....	...	...	5 units I.M. daily
4	2.1	830,000	2,000	..	..	..	.....	...	250	.....
5	...	.....	2,000	34	66	..	.....	2.6	250	.....
6	...	.....	.....	..	..	..	48,000	...	...	.....
11	4.2	1,530,000	3,250	53	44	3	.....	...	...	.....
12	...	.....	.....	..	..	..	.....	6.9	...	.....
13	...	.....	.....	..	..	..	.....	9.2	...	.....
17	8.3	3,160,000	4,100	58	39	3	.....	...	...	.....
21	...	.....	.....	..	..	..	168,000	...	...	.....

Additional tests before therapy: mean corpuscular volume, 96.3 cubic microns; mean corpuscular hemoglobin, 25.9 micromicrograms; mean corpuscular hemoglobin concentration, 25.9%; stools, negative; sulfobromophthalein sodium, 2% retention in 45 min.; total serum protein, 6 gm. per 100 cc.; albumin, 3.3 gm. per 100 cc.; globulin, 2.7 gm. per 100 cc.; gastric analysis (histamine), low acidity; Hanger's test, 1+ at 48 hr.

TABLE 5.—*Laboratory and Therapy Data, Case 5*

Hospital Day	Hemoglobin, Gm. per 100 Cc.	Red Blood Cells per Cu. Mm.	White Blood Cells per Cu. Mm.	Neutrophils, %	Lymphocytes, %	Eosinophils, %	Platelets per Cu. Mm.	Reticulocytes, %	Blood Transfusions, Cc.	Vitamin B_{12}
1	2.8	1,080,000	5,800	74	26	..	.....	...	...	.....
2	...	.....	.....	..	..	..	42,000	0.6	...	.....
6	3.6	1,060,000	2,500	..	..	..	34,000	...	...	.....
7	...	.....	.....	..	..	..	.....	1.6	...	.....
8	...	.....	.....	..	..	..	.....	...	250	.....
10	...	.....	.....	..	..	..	.....	...	...	30 mcg. I.M. daily for 5 days; 30 mcg. I.M. every 3 days
13	4.2	1,160,000	.....	..	..	..	.....	1.8	...	.....
14	...	.....	.....	..	..	..	.....	2.9	...	.....
15	4.8	1,320,000	4,750	59	37	4	58,000	21.0	...	.....
16	...	.....	.....	..	..	..	.....	17.0	...	.....
29	...	.....	.....	..	..	..	.....	10.5	...	.....
22	7.1	3,000,000	4,400	65	35	..	200,000	...	...	.....
28	6.4	2,710,000	6,350	60	37	3	164,000	...	...	.....

Additional tests before therapy: mean corpuscular volume, 136.3 cubic microns; mean corpuscular hemoglobin, 39.5 micromicrograms; mean corpuscular hemoglobin concentration, 29%; stools, Trichuris trichiura; prothrombin time, 16 sec. (control 13.3 sec.); sulfobromophthalein sodium, less than 2% retention in 45 min.; clotting time (Lee-White), 7 min. 8 sec.; bleeding time, 2 min. 6 sec.; glucose tolerance test, low normal; gastric analysis (histamine), no free hydrochloric acid; cholesterol, 103 mg. per 100 cc.; total serum protein, 6.6 gm. per 100 cc.; albumin, 3.6 gm. per 100 cc.; globulin, 3 gm. per 100 cc.; nonprotein nitrogen, 36 mg. per 100 cc.

While nutritional pancytopenia was considered on admission of this patient, the possibility of an aplastic anemia also had to be entertained. The patient was not only a confirmed alcoholic, but his drinking of denatured alcohol suggested the possibility of the action of substances deleterious to the bone marrow.

CASE 4.—A 22-year-old woman was admitted to the hospital on Jan. 3, 1953, because of loss of weight, diarrhea, and weakness. About three years before admission the patient had given birth to a healthy infant. At that time blood studies showed a hemoglobin level of 8.3 gm. per 100 cc., red blood cells 2,910,000, and 9,750 leukocytes, with 60% neutrophils and 40% lymphocytes. The patient felt well and weighed 140 lb. (63.5 kg.). Eight months before admission anorexia, weakness, and loss of weight gradually developed, with a total loss of 40 lb. (18.1 kg.). Three months before entry the patient began to have intermittent bouts of vomiting and diarrhea. The stools were semiliquid and malodorous but not frothy or foamy. Mild dependent edema of the ankles then appeared. During the two months before hospitalization high fever and drenching night sweats had been present. The dietary intake until the onset of the illness seemed to have been adequate.

Physical examination revealed a well-developed, poorly nourished, pale and acutely ill white woman. The patient's temperature was 102 F, pulse rate 120 per minute, respirations 20 per minute, and blood pressure 130/70 mm. Hg. The conjunctivas were extremely pale. There were several circular and flame-shaped hemorrhages in both retinal fields. The gums were normal. The tongue was dry, pale, smooth, and brownish. The liver was not felt. The tip of the spleen was barely palpable. Small ecchymoses were seen over the right knee. Laboratory findings on admission were 980,000 red blood cells per cubic millimeter and 1,900 white blood cells per cubic millimeter, with 36% neutrophils and 64% lymphocytes, and 48,000 platelets per cubic millimeter. The urine was normal. A roentgenogram of the chest was normal, and a Kahn test was negative.

During the first four days of hospitalization the patient remained in a critical condition, with a spiking fever that ranged between 101 F and 104 F. Four cultures of the blood and three of the stools were negative. She refused to eat. There were drenching night sweats. She had about five daily stools, watery and fetid. On the third hospital day a bone marrow examina-

tion revealed myeloid hyperplasia and 18% megaloblasts. Treatment was started with liver extract, 5 cc. given intramuscularly daily, and she was placed on a regimen of high protein and high caloric diet together with vitamin supplements. A transfusion of 250 cc. whole blood was given on the fourth and fifth hospital days. After the last blood transfusion there was a rapid drop in the temperature and the patient remained afebrile. A voracious appetite developed, and the diarrhea disappeared. New retinal hemorrhages failed to appear. On the 17th hospital day the number of erythrocytes had risen to 3,160,000 per cubic

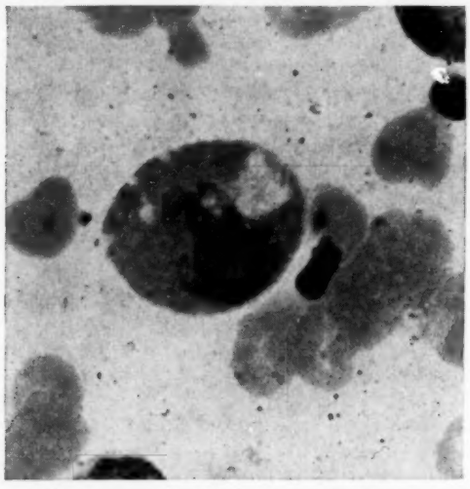

Fig. 1.—Bone marrow showing giant vacuolated metamyelocytes.

millimeter and the leukocytes to 4,100 per cubic millimeter. The differential count returned to normal. On the 21st hospital day the number of platelets had risen to 168,000 per cubic millimeter. On the 20th hospital day the bone marrow examination was reported as normal. The patient was discharged in good health. The patient, when seen three months after discharge, was in excellent health and had gained 28 lb. (12.7 kg.) in weight (table 4).

Aplastic anemia was suspected on admission of this patient. There were severe pancytopenia, high fever, slight splenomegaly, and prominent hemorrhagic manifestations. The bone marrow was intensely hyperplastic, with a predominance of the younger myeloid cells and with a large number of megaloblasts.

CASE 5.—A 30-year-old housewife was admitted on May 14, 1953, because of weakness and dizziness. One year before admission the patient had delivered a healthy infant. At that time she had a hemoglobin level of 7.3 gm. per 100 cc. She was discharged on a regimen of ferrous sulphate and folic acid, but she failed to take them. The patient nursed her child and had continued to do so until her admission to the medical service a year after delivery; menstruation had not reappeared. Ten months prior to admission there developed severe burning of the tongue, postprandial epigastric fulness, progressive weakness, easy fatigability, generalized malaise, and dizziness. The patient's dietary intake was poor. Three weeks prior to hospitalization diarrhea began, with semisolid and liquid, yellowish, frothy, foul-smelling stools. There were about six daily bowel movements. Blood-streaking was occasionally noticed in the stools. Two weeks before admission the patient noticed swelling of the ankles and of the periorbital region and also frequency of urination. This was accompanied by burning and by the passage of dark, cloudy urine, chilliness, and moderate fever. There had been a 20 lb. (9.1 kg.) weight loss during the illness.

Physical examination revealed an extremely pale, undernourished white woman in no acute distress. The patient's blood pressure was 122/74 mm. Hg, pulse rate 132 per minute, temperature 102 F, and respirations 20 per minute. No skin hemorrhages nor petechiae were seen. The pubic and axillary hair was scanty; the face was puffy. The conjunctivas and the oral mucosa were markedly pale. There were many fresh and old flame-shaped retinal hemorrhages. Severe pyorrhea alveolaris was present. The tongue was smooth and reddish. Shotty posterior cervical lymph nodes were palpated. The lungs were clear to percussion and auscultation. The heart was not enlarged. A faint blowing systolic pulmonary murmur was present. The liver was felt three fingerbreadths below the right costal margin. No other organs or masses were palpated. Pelvic examination was essentially normal. There was a 2+ ankle edema.

The laboratory work done one week before hospitalization revealed a hemoglobin level of 3.2 gm. per 100 cc., 1,020,000 red blood cells per cubic millimeter, and 4,500 white cells per cubic millimeter, with 71% neutrophils and 29% lymphocytes. The red blood cells showed macrocytosis and polychromasia. There were 2 normoblasts per 100 white blood cells. Results of urinalysis were normal. On admission the patient's hemoglobin level was 2.8 gm. per 100 cc. There were 1,080,000 red blood cells per cubic millimeter and 5,800 white blood cells per cubic millimeter, with 74% neutrophils and 26% lymphocytes. There were 42,000 platelets per cubic millimeter. The urine revealed traces of albumin, 10 to 12 white cells per high-power field, and many clumps of white blood cells. The Kahn test was negative. Trichuris ova were found in the stools. The chest roentgenogram was normal.

The patient continued to be severely ill during the first week of hospitalization. She had a spiking fever of up to 102 F during the first three hospital days. There was an average of five liquid bowel movements daily. Burning on urination continued. On the second hospital day a bone marrow aspiration revealed a generalized hyperplasia and 11% megaloblasts (fig. 1). Fever of up to 100 F continued until the 10th hospital day. Two hundred fifty cubic centimeters of whole blood was given on the eighth hospital day. On the 10th hospital day therapy with vitamin B_{12}, 30 mcg. daily, was started. On the 14th hospital day the dosage was reduced to 30 mcg. given intramuscularly every three days. A good appetite developed. The stools became soft and later semisolid. No new retinal hemorrhages appeared. The urinary symptoms disappeared. The urine became normal. Muscular strength was regained, and the patient became active in the ward. A second bone marrow study done 16 days after the initiation of vitamin B_{12} therapy was reported normal. The patient was discharged on the 32nd hospital day, after the hemo-

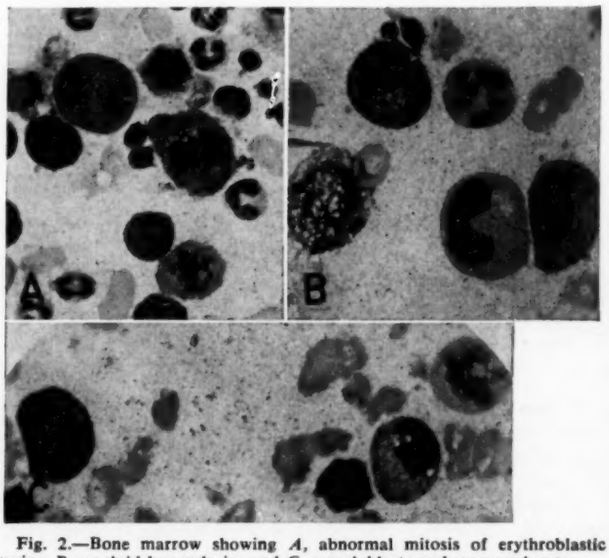

Fig. 2.—Bone marrow showing *A*, abnormal mitosis of erythroblastic series; *B*, myeloid hyperplasia; and *C*, megaloblasts and macropolycytes.

globin level had risen to 6.4 gm. per 100 cc., the red blood cell count to 2,710,000 per cubic millimeter, the white blood cell count to 6,350 per cubic millimeter, with 60% neutrophils, 37% lymphocytes, and a platelet count of 164,000 per cubic millimeter (table 5).

This case can easily be classified as one of sprue. The onset of symptoms followed delivery, yet a moderately severe anemia was present at the time of delivery.

CASE 6.—A 68-year-old woman was admitted to the hospital on May 8, 1953, because of easy fatigability of four months' duration. Eight months prior to admission she began to experience a vague epigastric pain, anorexia, postprandial fulness, and progressive weakness. Irregular episodes of low grade, afternoon fever then appeared. An undetermined amount of weight loss was experienced. Three weeks prior to admission, a watery, nonbloody, nonfoamy diarrhea began. There were about six daily bowel movements. Two weeks prior to admission, cough productive of greenish-yellow sputum, moderate shortness of breath, and weakness appeared. One week before hospitalization the patient was completely bedridden. Her dietary intake had been poor for many years but especially so since the onset of the illness for which she was hospitalized.

Physical examination revealed a poorly developed, poorly nourished, acutely and chronically ill white woman. The patient's blood pressure was 90/52 mm. Hg, pulse rate 98 per minute, respirations 26 per minute, and temperature 101.5 F. There were many ecchymoses in the skin, especially over the legs. The conjunctivas and the oral mucosa were extremely pale. There was a large hemorrhage in the right lower palpebral conjunctiva. The fundi could not be visualized because of bilateral lenticular opacities. The borders of the tongue were smooth and reddened. The cervical veins were slightly distended. The chest showed an emphysematous configuration. The percussion note was hyperresonant throughout, except at the left base, where dulness was encountered. Over this area the breath sounds were diminished and numerous moist and crepitant rales were heard. The heart was enlarged to the left. A faint blowing systolic murmur was heard all over the precordium. The abdomen was distended with gas. No organs or masses were palpated. There was a complete procidentia. The deep tendon reflexes were hypoactive.

Laboratory work done on admission revealed a hemoglobin level of 3.3 gm. per 100 cc., 800,000 red blood cells per cubic millimeter, and 1,700 white blood cells per cubic millimeter, with 64% neutrophils and 36% lymphocytes, and with 50,000 platelets per cubic millimeter. The urine revealed traces of albumin and 10 to 12 erythrocytes per high-power field. A roentgenogram of the chest showed multiple focal areas of pneumonitis in both bases, probably the result of an underlying bronchiectasis. The stools were negative for ova and parasites; the Kahn test was negative.

The patient was in critical condition. There was a daily spiking fever of up to 101 F. She had moderate dyspnea and a cough productive of greenish-yellow sputum. She refused oral feedings, so intravenous fluid therapy had to be used. There were about six diarrheal bowel movements daily. Large ecchymoses developed around the lower lip on the third hospital day. A bone marrow aspiration revealed a marked generalized hyperplasia, giant atypical metamyelocytes, giant polymorphonuclears, atypical mitoses in the white blood cells, and 6% megaloblasts (fig. 2). Whole blood, 250 cc., was given on the second and third hospital days with only slight clinical improvement. On the seventh hospital day, therapy with vitamin B_{12}, 30 mcg. daily given intramuscularly, was started. The patient spontaneously became afebrile on the eighth hospital day. During the first week after institution of vitamin B_{12} therapy, steady and progressive clinical improvement began. No further hemorrhagic manifestations developed. The patient's appetite returned, and she was placed on a high protein, high vitamin diet. The diarrhea disappeared; the cough became less intense, and the sputum was scanty. The patient gradually became ambulant and later was active in the ward. On the 44th hospital day chills, fever, dysuria, and urinary frequency developed. A urinalysis revealed pyuria and clumping of the white blood cells. A urine culture revealed Escherichia coli, and streptomycin, 1 gm. given intramuscularly, was administered for 10 days, with a good clinical response. The patient was discharged on the 60th day on a regimen of vitamin B_{12}, 30 mcg. weekly, and a high protein, high vitamin diet (table 6).

TABLE 6.—*Laboratory and Therapy Data, Case 6*

Hospital Day	Hemoglobin, Gm. per 100 Cc.	Red Blood Cells per Cu. Mm.	White Blood Cells per Cu. Mm.	Neutrophils, %	Lymphocytes, %	Eosinophils, %	Platelets per Cu. Mm.	Reticulocytes, %	Blood Transfusions, Cc.	Vitamin B_{12}
1	3.3	800,000	1,700	64	36	..	.....	...	...	.....
2	...	.....	.....	..	..	..	50,000	...	250	.....
3	...	.....	.....	..	..	..	.....	...	250	.....
4	7.1	2,360,000	4,650	..	..	..	.....	...	...	.....
6	6.9	2,226,000	.....	..	..	..	.....	...	...	30 mcg. I.M. daily for 5 days; 30 mcg. I.M. every 3 days
12	7.1	2,210,000	13,800	90	10	..	.....	...	...	.....
13	...	.....	.....	..	..	..	.....	5.0	...	.....
14	...	.....	.....	..	..	..	.....	7.4	...	.....
15	7.1	2,370,000	12,850	91	9	..	68,000	5.0	...	.....
21	5.3	2,150,000	7,300	76	24	..	70,000	...	...	.....
25	...	.....	.....	..	..	..	.....	...	250	.....
28	12.3	4,150,000	7,350	62	38	..	82,000	...	...	.....
34	12.0	4,410,000	9,900	63	37	..	140,000	...	...	.....
42	...	.....	.....	..	..	..	.....	0.6	...	.....
47	...	.....	.....	..	..	..	.....	0.4	...	.....
49	...	.....	.....	..	..	..	.....	0.2	...	.....
50	9.6	2,990,000	5,300	68	29	3	.....	...	...	.....
55	...	.....	.....	..	..	..	.....	0.3	...	.....

Additional tests before therapy; mean corpuscular volume, 122.7 cubic microns; mean corpuscular hemoglobin, 32.2 micromicrograms; mean corpuscular hemoglobin concentration, 26.3%; prothrombin time, 18 sec. (control 14 sec.); clotting time, 4 min.; bleeding time, 1 min. 40 sec.; stool culture, negative; gastric analysis (histamine), no free hydrochloric acid; Widal's reaction, negative; Weil-Felix reaction, negative; glucose tolerance test, low normal; blood culture, negative; stools, negative for ova and parasites; total serum protein, 6.5 gm. per 100 cc.; albumin, 2.8 gm. per 100 cc.; globulin, 3.7 gm. per 100 cc.

This case represented the only aged patient in our group. The most prominent feature of the bone marrow aspiration was an intense leukemoid reaction. There was no leukocytosis in the peripheral blood in spite of the severe bilateral pneumonitis. The low reticulocyte response was probably due to the administration of blood. Davidson [11] has shown that in cases of pernicious anemia the megaloblasts disappear from the bone marrow without a rise in the reticulocytes after blood transfusions.

CASE 7.—A 28-year-old chronic alcoholic was admitted to the hospital on Sept. 22, 1953, because of jaundice and fever of six months' duration. The patient had been in good health until six months prior to admission, when he began to feel lack of appetite and noticed a yellow coloring of the eyeballs. Frontal headaches and muscular aching and swelling of the legs also developed. Two months before hospitalization postprandial

11. Davidson, C. S.; Murphy, J. C.; Watson, R. J., and Castle, W. B.: Comparison of the Effects of Massive Blood Transfusions and of Liver Extract in Pernicious Anemia, J. Clin. Invest. 25: 858, 1946.

vomiting and burning of the mouth appeared. This was followed by diarrhea, with soft, yellowish stools. A total loss of weight of 30 lb. (13.6 kg.) was experienced. For the week previous to admission the patient had been unable to stand because of dizziness and weakness. His dietary intake had been poor for many years, especially during the previous six months.

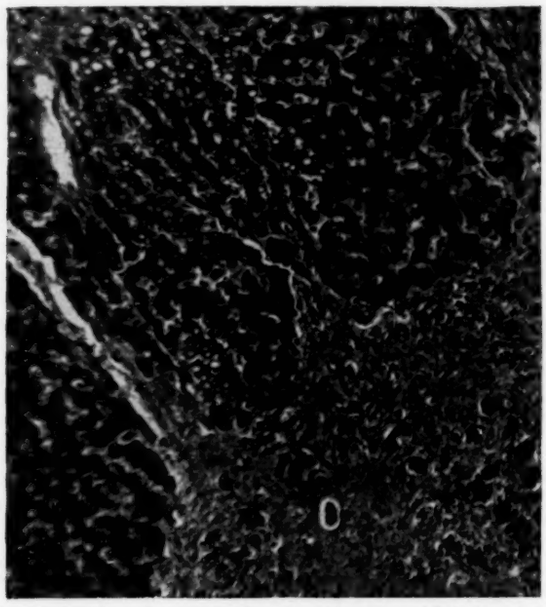

Fig. 3.—Section of liver showing far-advanced multilobular cirrhosis, inflammatory infiltration with round cells, remnants of hepatic cords enmeshed in the fibrous and inflammatory tissue, and fatty degeneration, vacuolation, and necrosis of the hepatic cells.

Physical examination on admission revealed a well-developed, undernourished, chronically ill, markedly pale man. The patient's temperature was 101 F, pulse rate 120 per minute, respirations 22 per minute, and blood pressure 120/60 mm. Hg. The scleras were icteric. The eye fundi showed numerous small, fresh

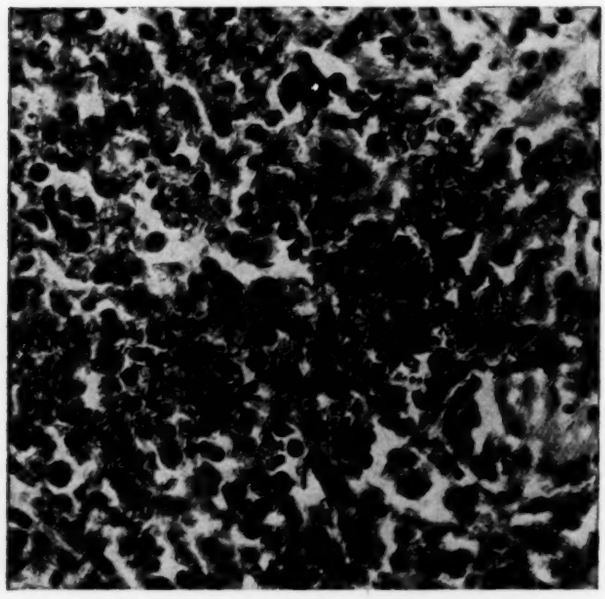

Fig. 4.—Section of spleen showing chronic passive congestion and foci of extramedullary erythropoiesis. Some of the cells in these foci are presumably megaloblasts.

hemorrhages. The tongue was smooth. The lungs were normal. There was a faint apical systolic murmur. The liver and the spleen were not palpable. There was moderate scrotal, pretibial, and ankle edema. Small, shotty lymph nodes were felt in the cervical, axillary, and inguinal regions. Laboratory tests made on admission revealed 950,000 red blood cells per cubic millimeter, 2.6 gm. per 100 cc. hemoglobin level, and 800 white blood cells per cubic millimeter, with 20% neutrophils, 70% lymphocytes, and 10% eosinophils. On admission and on the second and seventh hospital days there were 30,000 platelets per cubic millimeter. The urinalysis and roentgenograms of the chest were normal. A blood Kahn test was negative; blood and stool cultures were also negative. No sickle cells could be demonstrated. The Coombs test was negative. The serum bilirubin level after one minute was 0.6 mg. per 100 cc. and 3.4 mg. after 30 minutes. Results of the cephalin flocculation test were 4+ at 24 and 48 hours. The prothrombin time was 20.5 seconds (control 14.8 seconds). The nonprotein nitrogen level was 25 mg. per 100 cc.; chloride level, 550 mg. per 100 cc.; alkaline phosphatase level, 1.4 Bodansky units; and spherocytosis, not present.

The patient remained unconscious and febrile throughout his hospitalization. Whole blood, 500 cc., was given on the second hospital day without any appreciable effect. Fluids given intravenously, pencillin, and streptomycin were administered. Signs of congestive heart failure developed, and the patient was digitalized. A tender spleen was felt on the third hospital day. The vomiting and diarrhea continued. On the fifth hospital day the red blood cell count was 850,000 per cubic millimeter, white blood cell count 720 per cubic millimeter, and hemoglobin level

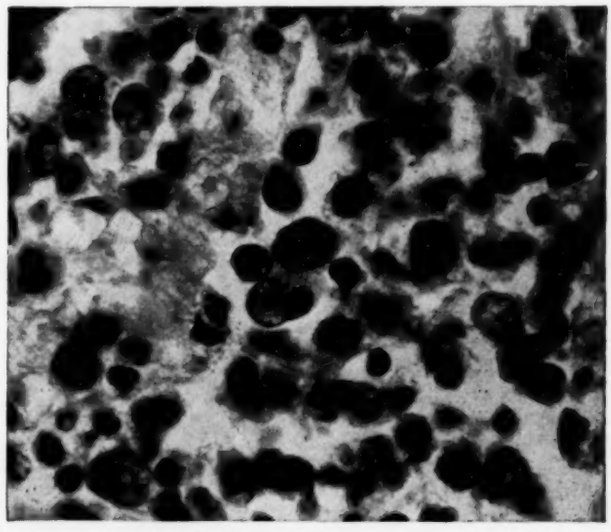

Fig. 5.—Section of bone marrow from the right femur with many megaloblasts and a few immature myeloid cells. Normal yellow marrow has been replaced by hyperplastic marrow.

2.5 gm. per 100 cc. On the seventh hospital day a bone marrow examination revealed large numbers of megaloblasts. It became apparent that the patient was suffering from pancytopenia secondary to nutritional deficiency, in addition to severe hepatic insufficiency. Liver extract therapy, 5 units intramuscularly daily, was begun. However, the patient became comatose during the night and died on the eighth hospital day.

At autopsy the liver weighed 1,700 gm. Microscopic examination revealed far-advanced multilobular cirrhosis (fig. 3). The hepatic parenchyma was largely replaced by fibrous and inflammatory tissue. The inflammatory tissue consisted mostly of round cells, histiocytes, and macrophages. Occasional cords of hepatic cells could be seen enmeshed in the fibrous and inflammatory tissue. The remainder of the hepatic cells showed varying degrees of fatty degeneration, vacuolation, and necrosis. The picture was one of far-advanced cirrhosis after infectious hepatitis. The spleen weighed 760 gm. Microscopic examination revealed severe chronic passive congestion (fig. 4). Many foci of extramedullary hematopoiesis consisting chiefly of cells resembling megaloblasts were found in the red pulp. The bone marrow, including that of the long bones, was intensely hyperplastic (fig. 5). Megaloblasts were most predominant. The myeloid elements showed atypical mitoses and varying degrees of immaturity. The megakaryocytes were sparse.

This patient died of hepatic insufficiency secondary to infectious hepatitis. The presence of a severe nutritional pancytopenia was an important factor contributing to the patient's death. Clinically, this case could not be distinguished from hypersplenism secondary to congestive splenomegaly.

SUMMARY AND CONCLUSIONS

Study of seven cases characterized by pancytopenia, generalized hyperplasia and megaloblastic arrest of the bone marrow, and, frequently, splenomegaly showed that the clinical picture in these cases is such that the differentiation from serious blood dyscrasias, such as aplastic anemia, leukemia, thrombocytopenic states, or from subacute bacterial endocarditis is difficult. The fundamental concept of qualitative or quantitative physiological alterations of the formed blood elements and their precursors is the common denominator to all these diseases, subacute endocarditis excluded. In the reported cases this altered physiology resulted from a severe deficiency of the substances involved in the maturation of the blood cells.[12] It is only through careful yet simple laboratory studies that a correct diagnosis may be made and proper treatment instituted. When the megaloblastic anemias are discussed, more importance should be given to the alterations in the leukocytes and platelets and their precursors in the bone marrow, as well as to the erythrocytes and their precursors.

Box 6671, Loiza St. Station, Santurce (Dr. Marchand).

12. Lawrason, F. D., and Cronkite, E. P.: Incidental Finding of Megaloblastic-like Cells in Bone Marrow of One of Two Swine with Macrocytic Anemia and Achlorhydria, Yale J. Biol. & Med. 22: 57, 1949.

MULTIPLE PATTERN METHOD OF VISUAL FIELD EXAMINATION

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and
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Extrafoveal vision is one of the most important of all ocular functions. It is essential to locomotion, and, in this era of rapid movement, it is of greater protective value to the human organism than any other of the special senses. Certainly it is of more importance today than ever before in history. A correct analysis of abnormalities of the visual field has a diagnostic value in disease of the entire visual pathway that can hardly be overemphasized. Ocular dysfunction is frequently reflected in defective visual fields as are disease in the entire supratentorial compartment of the intracranial cavity and some general systemic disturbances of both somatic and psychic origin. Examination of the visual field includes many methods and devices. Most of them are cumbersome and difficult to use with any degree of both speed and accuracy. The complexity of the methods available, the time required to apply these methods, the size and cost of the equipment needed, and the general monotony of a careful visual field examination have discouraged the widespread use of perimetry even though its importance is fully recognized. The need for a rapid and reasonably accurate screening test that would detect visual field defects in a high percentage of the unknown number of persons with these defects has prompted the development of a method that was first described in 1953 by us.[1]

There appears to be almost universal agreement that a visual field examination would be highly desirable in examinations of: (1) all persons undergoing an eye examination, (2) all persons undergoing routine physical examination, (3) applicants for drivers' licenses, (4) personnel in industry, especially those who work with rapidly moving machinery, (5) armed forces personnel, (6) institutionalized patients, and (7) persons submitting themselves for examination in mass surveys for the detection of glaucoma or other ocular or neurological disease. Most ophthalmologists who have been questioned admit that only a small percentage of patients are routinely examined as to visual fields. All agreed that such an examination was desirable but that lack of time prevented it. The screening test for extrafoveal visual function should: (1) be simple in design and application; (2) be capable of being set up and administered by a technician or a nurse with a minimum of preliminary training; (3) be comprehensible to the average patient, including children over 6 years and adults over 60; (4) be performed with equipment so standardized that the examination would remain unchanged regardless of where or by whom the test is conducted; (5) require only three to five minutes for the examination of both visual fields; (6) give results that are easily and quickly recorded and that are easy to interpret; (7) supplement standard methods of perimetry; (8) imply normal fields if no visual field defect is revealed in its routine use, unless there is some other reason for believing that some defect does, in fact, exist; (9) point out the location of any defect in extrafoveal vision, indicate its character, and thus simplify the subsequent standard perimetric examination of the defect; (10) be performed with equipment adaptable for use in examination of the visual fields by standard methods, for the testing of central visual acuity by the Snellen method, and perhaps even examining color vision.

It can be argued that a screening method that fulfills these requirements would not be as accurate as a carefully performed tangent screen examination and would fail to detect certain visual field defects of importance to the patient's future visual function. These patients might be given a false sense of security as regards the integrity of the visual apparatus. These objections become invalid if the person interpreting the results recognizes the limita-

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The equipment used in this study was manufactured by Jenkel-Davidson of California, 366 Post St., San Francisco 8.

1. Harrington, D. O., and Flocks, M.: Visual Field Examination by a New Tachystoscopic Multiple Pattern Method, Am. J. Ophth. 37: 719 (May) 1954.

tions of the method. Only after careful ophthalmologic examination can a person be reassured as to the health of his eyes. All screening methods of examination designed for rapid evaluation of disease states or abnormal function are imperfect. Without them, however, many persons are denied the chance of any examination whatever, and disease that might easily have been detected is neglected altogether. This is especially true of the visual

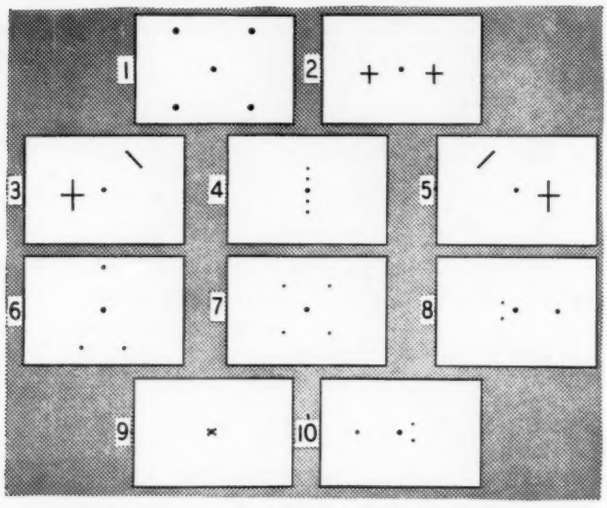

Fig. 1.—The 10 patterns in series 1 in the order of exposure for visual field examination.

field examination, for most persons never have the benefit of this examination. In developing the screening method of visual field examination to be described we have been fully aware of our responsibilities in this respect. We have tried to eliminate as many imperfections as possible from the method consistent with practicality and have conducted the experiments accordingly. Most of the aims outlined above have been satisfied, and changes and improvements have been made in both the method and the equipment.

METHOD AND MATERIALS

The multiple pattern method of visual field examination uses the principle of tachistoscopic or flash presentation of simple, abstract patterns of lines, dots, and crosses to the fixing eye. These lines and dots act as visual stimuli in the various parts of the visual field. The patterns are printed in white fluorescent sulfide ink on white cards so that with ordinary room light only a black central fixation dot is visible. When the card is illuminated by a flash of ultraviolet radiation of one-fourth second duration, the pattern stands out clearly against the background of the card and acts as a stimulus to extrafoveal vision in that area. The duration of the flash of black light that activates the pattern is sufficient to allow the subject to see the pattern but is too short to allow a shift of fixation. If a portion of the visual field is defective the stimulus of the pattern in that area will not be detected and the patient will describe the pattern erroneously. Each pattern is designed to test specific areas of the visual field so that errors in describing the pattern will delineate the type of field loss, which may then be examined by standard perimetric methods. A composite of the pattern stimuli covers most of the visual field within the 25 degree radius and encompasses the vast majority of visual field defects. Errors in describing the patterns may be checked off on a chart of the pattern composite as a means of recording the examination. Areas of visual field loss are seen at a glance on this chart.

The pattern cards are bound in a book of 10 cards, with an Amsler [2] grid on the back cover for the testing of macular function. The patterns are exposed one at a time in a box containing a black light tube and equipped with a chin rest so that the patient's eye is at a fixed distance of 330 mm. from the card. The black light flash that activates the luminescent pattern is automatically timed at one-fourth second duration and is controlled by a button switch. A second switch, when operated manually, will turn the light on and off so that longer exposures may be obtained if desired, or the light may be left on constantly for illumination of the inside of the box cover, which then becomes a small tangent screen with which luminescent test objects are used, as in the Harrington black light perimeter.[3] In the average patient both eyes can be tested with all 10 pattern cards in three to four minutes. The time required will necessarily vary with the patient's mental capacity to respond to the stimuli and describe the patterns; this is governed by such factors as age, language facility, and visual acuity. The box, in which the book of patterns is exposed, can be operated from any light socket and weighs 20 lbs. (9.1 kg.).

THE STIMULI

The fluorescent sulfide ink with which the patterns are printed is the same as that used for printing the luminescent test objects that are used with the Harrington black

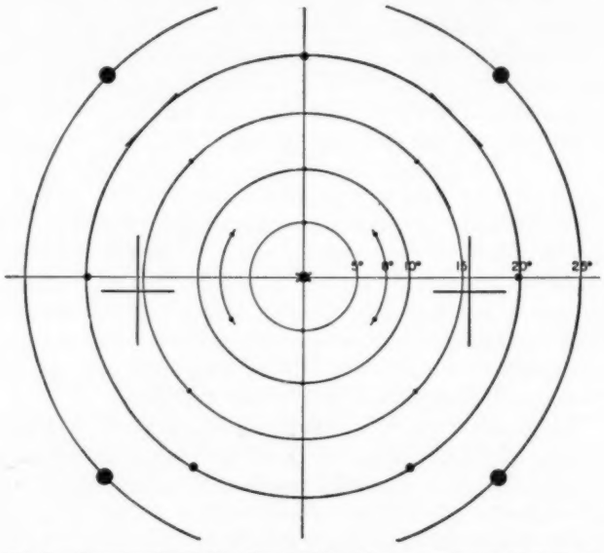

Fig. 2.—A composite of the stimuli of the 10 patterns shown in figure 1.

light perimeter.[3] It is activated by the ultraviolet radiation that emanates from a black light tube covered by a tubular Corning 5874 filter or its equivalent. The intensity of the radiation in both the perimeter and the multiple pattern black light tube is calibrated so that the brightness of the stimuli in both instances is the same as

2. Amsler, M.: Earliest Symptoms of Disease of the Macula, Brit. J. Ophth. 37: 521 (Sept.) 1953.
3. Harrington, D. O.: Perimetry with Ultraviolet (Black) Light and Luminescent Test Objects, A. M. A. Arch. Ophth. 49: 637 (June) 1953.

that reflected from a white paper or plastic test object exposed to 7 foot-candles (f.-c.) of light from a visible incandescent light. Comparative brightness studies were made with a Luckeish-Taylor brightness meter and a Model B Taylor low brightness meter calibrated against a United States Bureau of Standards lamp at color temperature 2,537 K. The correction factor was the reading

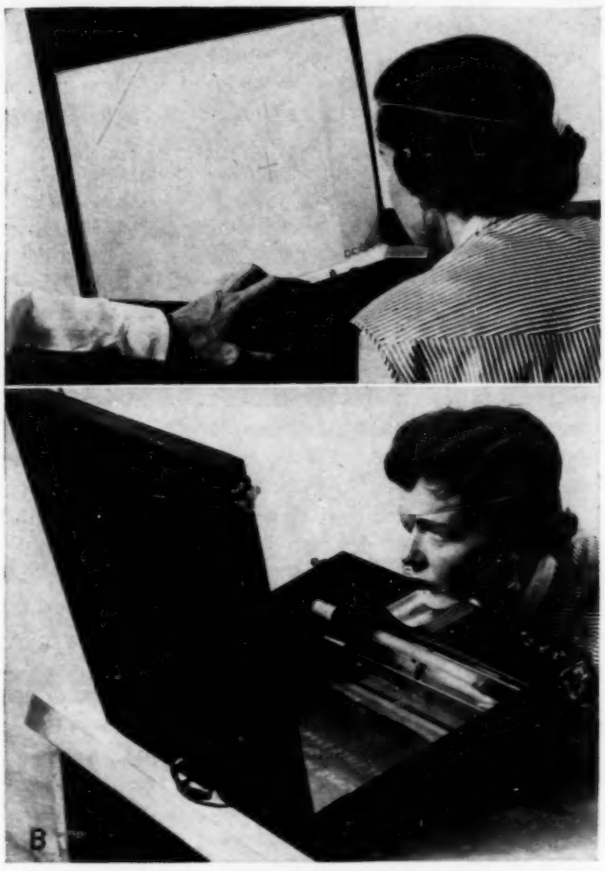

Fig. 3.—*A*, the box in which the patterns are exposed, showing the book of patterns in position, the patient's head in correct position, and the switches controlling the source of illumination. *B*, the box, showing the source of black light illumination and the cover being used as a tangent screen.

times 0.7 = foot-lambert. Meter readings were made on 100-mm. disks of white paper and mat-finished white plastic illuminated against a black background with 7 f.-c. of light from an incandescent bulb. Similar readings were made on 100-mm. disks printed in fluorescent sulfide ink and activated by a black light tube placed at the same distance as used on the Harrington black light perimeter.

Additional readings were taken with the use of different-sized test objects and of varying intensities and distances of the black light tube, so that identical average brightness readings were obtained from the white test object reflecting light from an incandescent source and the luminescent test object acting as the source of light when stimulated by a black light tube.

It was found, for example, that: (1) the average brightness of a 5 mm. white plastic test object against a black background illuminated with 7 f.-c. of light from an incandescent source was $1.5 \times 0.7 = 1.05$ foot-lambert; (2) the average brightness of a 5 mm. white fluorescent test object against the same background activated by a 6 watt filtered black light tube 4 in. away was $1.5 \times 0.7 = 1.05$ foot-lambert; (3) the black background under 7 f.-c. of incandescent light had an average brightness of 0.35 foot-lambert; and, (4) there was no measurable brightness of the black background under black light illumination. In spite of the equality of average brightness measurements noted above, the fluorescent test object appears to be considerably brighter to the human eye than the reflecting test object. This appears to be due to the contrast ratio of the test object to its background. The black background, with an average brightness of 0.35 foot-lambert, is 33% of the brightness of the white test object under incandescent light. The fluorescent test object therefore appears to be three times as bright as the reflecting test object.

PATTERNS

The patterns are printed on 12 by 17 in. white cards with a semimat finish of a whiteness to match the fluorescent sulfide ink. In the center of each card is a 5 mm. black dot for fixation. In a moderately well-lighted room of uniform brightness the pattern is completely invisible until activated by the black light source. The brighter the room the less contrast there will be between the pattern stimuli and the background and the greater will be the sensitivity of the test. The pattern cards are bound in a plastic ring binder that fastens into the box so that they are held at a constant distance from the patient's eye. Experiments were performed with 48 different patterns. It is likely that other patterns will be of value in special purpose surveys of specific areas of the visual pathway; these will be printed as separate series. For a general survey of the visual field, the patterns presented here have an adequate composite of stimuli in most areas of the field. A special series of patterns is being designed for visual field studies in children.

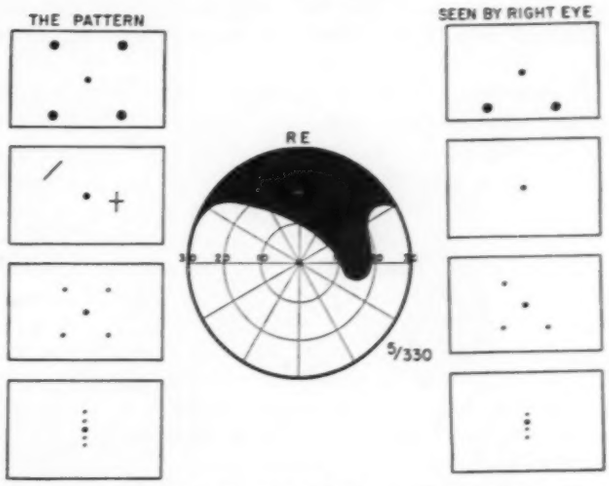

Fig. 4.—Visual field and pattern defect in a patient with choroiditis juxtapapillaris.

Patterns must be simple, and the test is more rapid and efficient when the observer can describe them with a single number rather than responding with a complicated word picture; for example, he may say "three" or "three dots" in response to a certain pattern. If there are, in fact, three dots then the next pattern can be exposed, but

if he has missed one dot out of a four dot pattern he should be instructed to indicate where he saw the three dots. If one dot or part of a pattern is missed, the card is repeated, and if it is again missed it is crossed off the record chart. Except for the two patterns that contain the short line and the cross in the area of the blind spot, all the patterns can be described in this manner. The

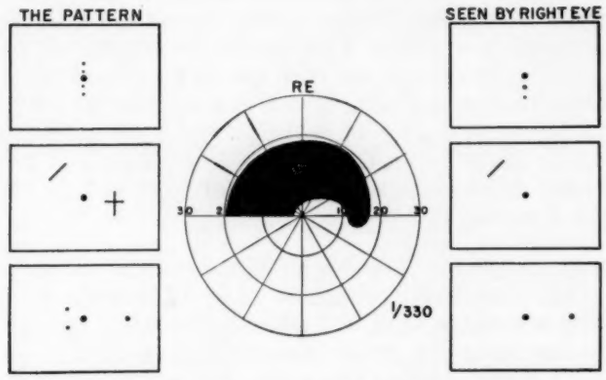

Fig. 5.—Visual field and pattern defect in a patient with open angle glaucoma.

patterns must avoid the "phenomenon of completion." Our experience has agreed with that of Bender,[4] who found that a pattern in which any of the component parts crosses the vertical midline of the field is subject to "completion" by the observer even though he may see only a part of it; for example, if a square or a circle is presented to the patient he may "complete" it as a full square or circle even though a portion of it may fall into an anopic portion of the visual field. For the same reason familiar objects or designs in a pattern, such as letters or numbers or parts thereof, may be "completed" by the observer in an anopic portion of the field.

It should be noted that all patterns cause two or more stimuli in the visual field and thus take advantage of the "phenomenon of extinction" to increase the sensitivity of the test.

Bender [4] has shown that, when the visual field is stimulated simultaneously in two or more areas, the stimulus in a seeing portion of the field will "extinguish" a response in a relatively anopic portion of the field even though the object causing a single stimulus can be seen in that area when tested by standard perimetric techniques. He has called this the "extinction phenomenon." Inasmuch as the eye is constantly being exposed to multiple stimuli in all portions of the visual field in its daily use, this is probably a more accurate statement of the actual visual field than the one obtained by the single stimulus used in standard perimetric methods. This utilization of the "phenomenon of extinction" has, on a number of occasions, permitted detection of visual field defects with the multiple pattern method that had been missed in routine tangent screen examinations with small test objects. Later perimetric examination revealed these defects but only after much more careful and tedious analysis and in at least one case only when double stimulation was also used on the tangent screen. Under these circumstances, what appears to be a rather rapid, crude, and qualitative screening method becomes a relatively sensitive examination. The multiple pattern method has provided us with a most useful and interesting experimental technique for studying the "extinction phenomenon."

The 10 patterns that have been selected for the first series book are largely made up of round dots that vary from 1 to 8 mm. in diameter (fig. 1). The larger dots are placed at the peripheral limits of the field (25 degrees), and the 1 mm. dots are close to fixation. Each pattern is designed to stimulate different areas of the field within the 25 degree radius, and no pattern has more than four dots. One pattern (number 2) has two small crosses placed in the center of the normal blind spot for each eye. This is primarily a test pattern but may indicate nasal field loss if neither cross is seen. If the patient is properly adjusted to the chin rest so that his eye is 330 mm. from the card, if he is maintaining steady fixation on the central black dot, and if one eye is properly covered, he will see only the cross to the nasal side of the eye being tested. If the person sees two crosses the examiner will know that the person is not in proper position or that his fixation is eccentric. With the crosses constantly illuminated the patient's chin may be moved forward or backward until only one cross is visible, thus establishing correct position for the remainder of the cards. Two of the patterns (numbers 3 and 5) have crosses located in the area of the normal blind spot, one for each eye, and an additional stimulus in the form of a short, oblique line in the upper nasal quadrant. The arms of the cross extend beyond the limits of the normal blind spot so that the normal patient should be aware of at least a portion of the cross and may even "complete" it as a cross. If no part of the cross is seen it indicates a blind spot enlargement.

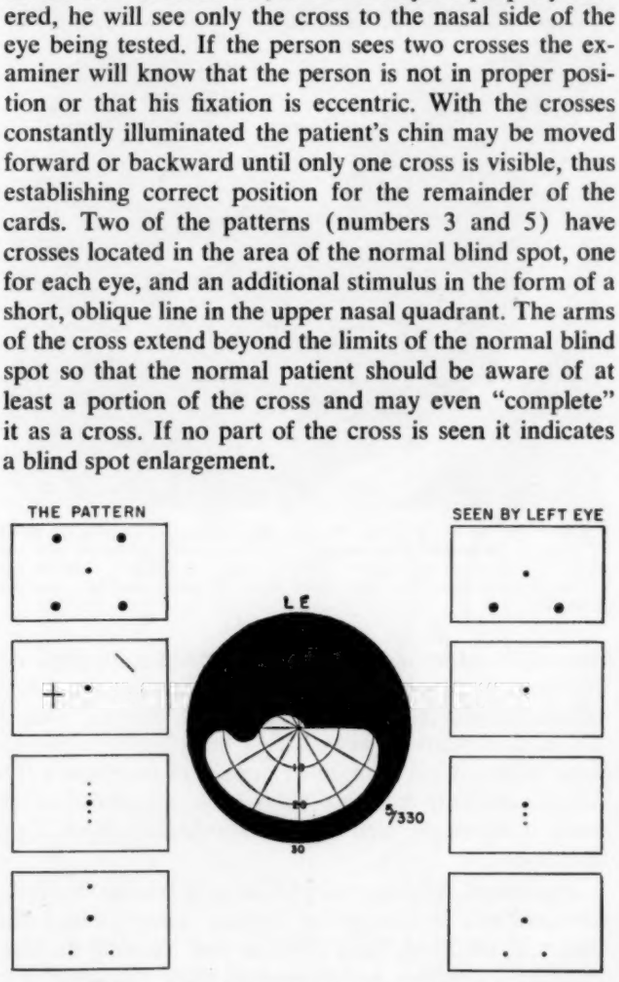

Fig. 6.—Visual field and pattern defect in a patient with advanced glaucoma.

When all the stimuli of the 10 cards are laid out on a single card they form a composite pattern that shows five stimuli scattered through each quadrant plus five in the vertical meridian and three in the horizontal (fig. 2). This means that 31 areas of the visual field within the 25 degrees radius are stimulated. Stimuli placed beyond

4. Bender, M.: Disorders in Perception, Publication 120, American Lecture Series, Monograph in American Lectures in Neurology, edited by Charles D. Aring, Springfield, Ill., Charles C Thomas, Publisher, 1952.

the 25 degree radius have been tried in persons with both normal and abnormal fields and have been found to have insufficient value to justify their inclusion in the general pattern series. They frequently cause false responses due to exclusion by the brows, lids, or nose.

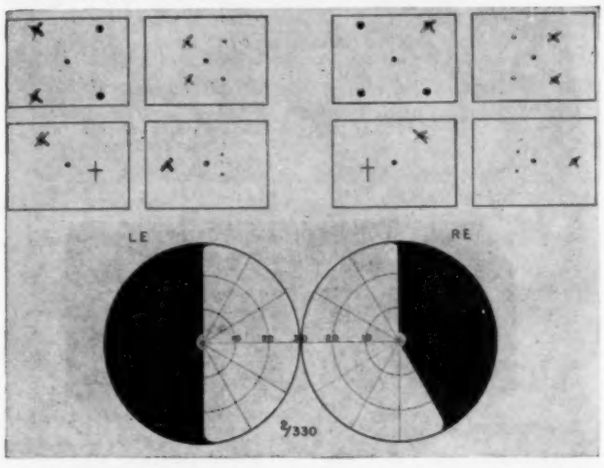

Fig. 7.—Portions of patterns missed in presence of bitemporal hemianopsia in a patient with pituitary adenoma.

EQUIPMENT FOR EXPOSING PATTERNS

The box in which the pattern book is fastened through its ring binding is made of metal and measures 18 by 18 by 6 in. It has a hinged cover that, when opened, supports the pattern cards. The inside of the cover may be used as a tangent screen with a luminescent fixation spot and test objects (fig. 3). A black light tube is contained with its transformer and connections in a housing beneath the patient's chin so that the ultraviolet radiation is directed against the lid of the open box. The light is controlled by three switches: (1) a lever-type switch, which connects the tube with the current; (2) a black push button switch, which allows light to be turned on and off manually and which is used for longer exposure of the patterns if desired and for constant illumination when the cover of the box is being used as a tangent screen; and (3) a red push button switch, which allows the light to flash on for one-fourth second. An eye cover is fastened to a bar on the chin rest and may be shifted to cover either eye. The patient is seated, his chin is adjusted to the rest, and one eye is covered. The examiner should face the patient or stand slightly to one side so that he may observe fixation and head position. The patient is instructed regarding fixation on the central spot and told that a brief flash of bluish light will illuminate a design of dots or lines on the card and then he is to state the number of dots or lines that he sees. The examiner then pushes the red button activating the luminescent pattern with a one-fourth second flash of ultraviolet radiation. Correct responses are not recorded, but stimuli that are missed are crossed out on the composite pattern chart with a red crayon. A short experience with the test will enable one to master the method of turning the pages of the book, the testing of fixation and position, and the memorizing of the pattern sequence. The examination should be conducted in a room that is uniformly but not too brightly lighted, and care should be taken that too bright light does not fall directly on the pattern cards. Room light may be adjusted after a few trials with normal persons. A ceiling light of 100 watts at a distance of approximately 10 ft. will give proper room illumination. If a light meter is available the measure of room light on the cards should be about 6 f.-c.

EXPERIENCE WITH THE METHOD AND COMPARATIVE FIELD STUDIES

In the past two and one-half years of experiments with this method of visual field examination a large number of normal and abnormal fields have been tested. In the initial experiments many patterns were used that have since been discarded. Pilot models of the light box had a manually controlled shutter at first. Later a variable automatic timer was attached to determine the optimum flash duration. Patients were tested after the visual fields had been examined, and records were kept only as to whether the pattern test agreed with the perimeter examination. In the past one and one-half years a fairly large volume of records has been kept on both normal and abnormal visual fields. Over 250 normal persons were tested at the Veterans Administration Hospital, the University of California, and in private practice. These persons varied in age from 5 to over 80 years. The present pattern series appears to be somewhat complicated for younger children. Our limited experience would indicate, however, that a special series could be designed that would be of much value in the age group between 5 and 10 years, in which standard perimetric techniques are almost useless. At least 250 additional normal persons, mostly physicians, were tested at the exhibit of the multiple pattern method at the 103rd Annual Meeting of the American Medical Association in June, 1954, in San Francisco.

Included in this normal group of over 500 persons were a number of persons with aphakia who had normal visual fields by standard perimetric methods but whose

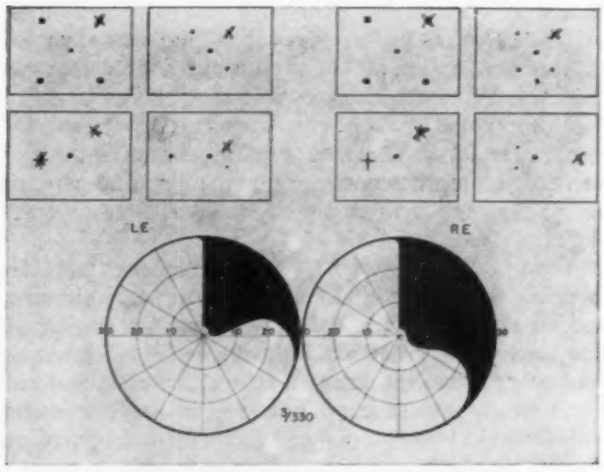

Fig. 8.—Portion of patterns missed in presence of right homonymous quadrantanopsia in a patient with tumor of the left temporal lobe.

response to the multiple pattern method were almost uniformly poor both with and without glasses. These persons with aphakia showed a general contraction of the visual fields when tested by this method. Erroneous responses in normal young and middle-aged persons numbered less than 2%. Another 5% in the age group above 65 years missed one or more stimuli on the pat-

terns and showed normal visual fields when tested on the tangent screen. Some of these errors were due to failure to understand the test, but the majority were probably due to the effect of "extinction" by the use of multiple stimuli. Bender has shown that extinction plays a dominant role in sensory perception in persons over 65 years of age. The method thus uncovers a disorder in perception that, while not due to disease of the visual pathway in the ordinary sense, is probably of significance from an industrial viewpoint. In the group of physicians examined at the American Medical Association exhibit, four gave abnormal responses to the patterns, revealing previously unsuspected visual field defects. Two of these physicians had field defects that were strongly suggestive of bilateral glaucoma. Sixteen physicians with known visual field defects of various types submitted themselves for examination, and in all but two instances the defect was readily and correctly detected with the patterns. The two failures revealed small, isolated paracentral scotomas due to old choroiditis. The defects fell in an area of the pattern composite that contained no stimulus. The patterns have since been changed slightly to give better coverage of "bare" areas.

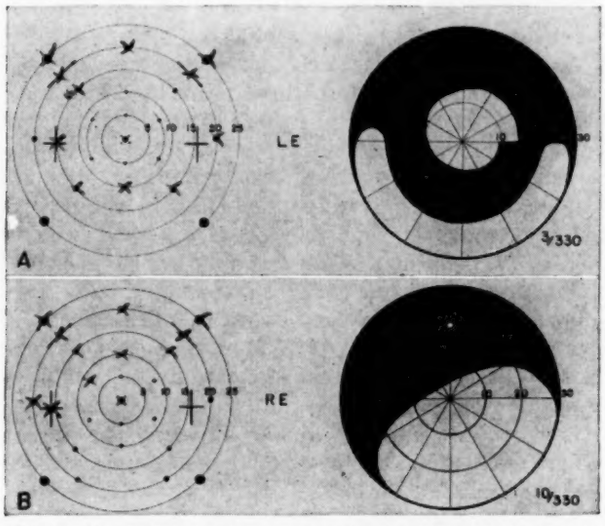

Fig. 9.—Visual field defects. *A*, responses of patient with glaucoma to the multiple pattern method shown on composite chart. *B*, responses of patient with retinal detachment shown on composite chart and tangent screen record.

A few persons gave normal pattern responses and later revealed abnormal visual fields. These cases were rare, and, in most instances, the field defects were minimal. They included two patients with very early glaucomatous field change; one with a small central scotoma, and one with a small sector defect of unknown cause. One patient with hysterical amblyopia and gross constriction of all isopters on tangent screen examination gave a normal multiple pattern response. Records have been kept on over 100 patients with abnormal multiple pattern responses on whom tangent screen and perimeter studies were also made (fig. 4-10). All types and degrees of field loss were encountered, and in every instance the response to the patterns indicated the location and general type of field loss and was consistent with the subsequent tangent screen examination. The diagnosis and type of field defect in these cases are given in the table. In addition to the cases tabulated, multiple pattern tests and comparative visual field examinations were made on a large number of patients in whom no permanent records were kept because the examinations were primarily for the purpose of testing the validity of patterns that have since been abandoned. Many of these patients showed abnormal responses to the patterns tested, but, for one reason or another, the responses were not considered entirely satisfactory owing to the complexity of the patterns used.

Patients with Visual Field Defects That Were Compared by the Multiple Pattern Method and the Tangent Screen

Visual Field Defect	No. of Cases	Diagnosis
Central scotoma.....	16	Multiple sclerosis, choroiditis, amblyopia ex anopsia, toxic amblyopia, optic neuritis, macular degeneration, angiospastic retinopathy
Paracentral scotoma....	3	Choroiditis
Blind spot enlargement..	3	Papilledema
Altitudinal defects.....	10	Retinal detachment, Eales' disease, inflammation of the uvea
Glaucomatous defects...	29	Glaucoma
Sector defects.....	6	Juxtapapillary choroiditis, occlusion of retinal artery or vein, Hodgkin's disease
Bitemporal hemianopsia	8	Adenoma of pituitary gland, craniopharyngioma, meningioma of dorsum sellae turcicae, multiple sclerosis
Homonymous hemianopsia and quadrantanopsia	18	Cerebral glioma in temporal, parietal, and occipital lobe; multiple sclerosis of optic tract; subdural hematoma; cerebrovascular accident; aneurysm of circle of Willis
Concentric contraction..	8	Primary pigmentary degeneration of the retina, Koyanagi-Vogt syndrome, hysteria
Total.....	101	

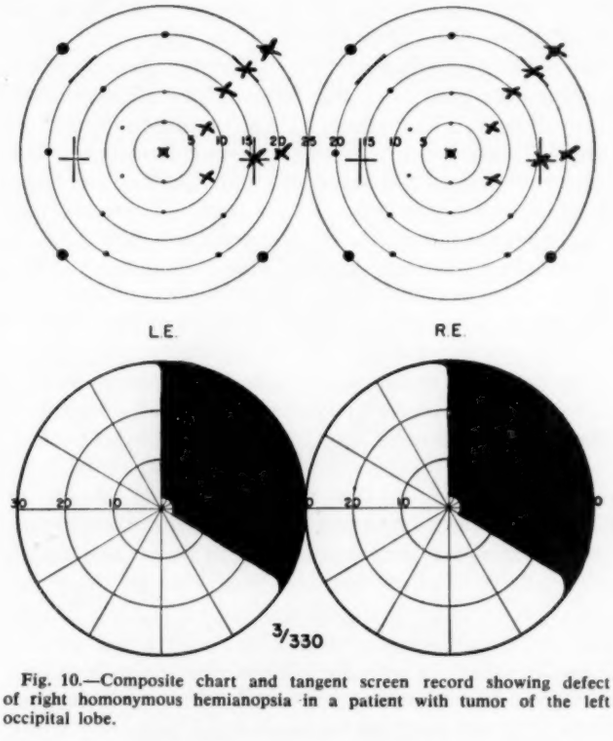

Fig. 10.—Composite chart and tangent screen record showing defect of right homonymous hemianopsia in a patient with tumor of the left occipital lobe.

SUMMARY AND CONCLUSIONS

A definite need exists for a rapid and simple screening method of visual field examination. The multiple pattern method fills this need and constitutes a practical and

readily available screening test that can be performed in a few minutes by a relatively untrained person. Almost all normal adults under 65 years of age respond quickly and accurately to the test. Very small visual field defects and markedly peripheral defects may occasionally be missed by the method. Persons with aphakia respond as though they had a visual field loss. The presently available pattern series has a composite of stimuli that covers most of the area of the visual field within the 25 degree radius. Other pattern series are contemplated for children and for testing special areas of visual field loss. The patterns, in their use of multiple stimuli, take advantage of the "extinction phenomenon" to increase the sensitivity of the test. The multiple pattern method is based on the principle of flash presentation of simple abstract patterns of lines and dots to a fixing eye. Because the duration of the flash is too short to allow for a shift of fixation the physician can occasionally examine a field that cannot be tested by the usual methods. Experience with the method in over 500 normal and 100 abnormal patients shows a close and consistent parallel between the visual field defects detected by tangent screen examination and the multiple pattern method in all types of visual field loss. By the widespread use of the multiple pattern method the number of visual fields examined can be increased by many thousands; however, the limitations of the multiple pattern method must be recognized. It is not considered a substitute technique for but rather a supplement to the standard perimetric techniques.

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HIRSUTISM—A MANIFESTATION OF JUVENILE HYPOTHYROIDISM

William H. Perloff, M.D., Philadelphia

This report consists of a description of four hypothyroid children, one male and three females, who had an unusual type of hirsutism (fig. 1) that disappeared within six to eight months after the initiation of treatment with desiccated thyroid.

REPORT OF CASES

CASE 1.—A 2½-year-old white girl who had the chief complaint of marked hirsutism was described by her mother as being very sluggish, and there was nothing in the history to suggest abnormality of development or growth. Except for the hirsutism, which had been present since birth, there were no other complaints. The patient's height was 37 in. (94 cm.), and her weight was 35 lb. (16 kg.). The skin was dry, and the head hair was coarse and dry. Her complexion was pallid, and marked protrusion of the abdomen was present, but this was due, at least in part, to lordosis of the spine. Of particular interest was the marked hirsutism across the shoulders and down the back, ending abruptly at the belt line. Long black hair was noted on the outer aspects of both arms and legs; the inner surfaces of the extremities were completely free of hair, as were the chest and abdomen. There was a slight increase in hair growth on the sides of the face.

Results of a blood cell count were: hemoglobin level 12 gm. per 100 cc. and red blood cells 4,000,000 per cubic millimeter; the number of white blood cells was normal. The serum cholesterol level was 270 mg. per 100 cc., and the radioiodine (I^{131}) uptake was 7% in 24 hours. The bone age was reported as being "slightly retarded." No urinary estrogens or gonadotrophins were detectable, and the 24 hour levels of 17-ketosteroids and corticoids were 1.1 mg. and 0.2 mg. respectively. In view of the low I^{131} tracer study and the serum cholesterol level, which was considered to be somewhat elevated for a child of this age, the patient was given increasing doses of thyroid starting with ¼ grain (0.016 gm.) a day. Ten weeks after the initiation of therapy a maintenance dose of 1 grain (0.065 gm.) was reached. Eight weeks later, or 18 weeks after the onset of thyroid therapy, the mother reported that the patient's skin had become softer and smoother and that some of the superfluous hair had fallen out. She also stated that an increase in physical activity had occurred. Eight weeks later the patient was reexamined. At this time the skin was of normal texture; the head hair was definitely less coarse and dry and, surprisingly, no superfluous hair was demonstrable. The blood cholesterol level at this time was 200 mg. per 100 cc.

CASE 2.—A 5-year-old white girl who had the chief complaint of hirsutism was seen about two weeks after the patient in case 1, and the similarity in distribution of excess hair was noted. Except for the excess hair, some dryness of the skin, and shortness of stature, the youngster was described by the mother as being perfectly normal. The patient's height was 43.25 in. (110 cm.) and weight 42.25 lb. (19 kg.). The skin was dry and pallid, and the head hair was coarse and dry. Marked hirsutism, identical in distribution and texture with that of the patient in case 1, was apparent. Slight protuberance of the abdomen was noted. Results of examination were otherwise normal.

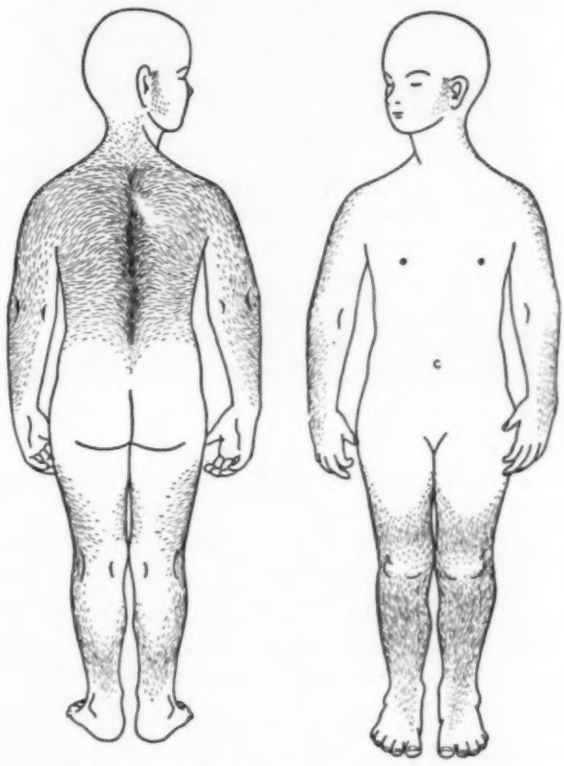


Fig. 1.—Distribution of hirsutism in hypothyroid children.

Associate Professor of Medicine and Director of the Endocrine Department, Temple University School of Medicine, and Chief of the Endocrine Clinics, Philadelphia General Hospital.

The serum cholesterol and protein-bound iodine levels were 240 mg. per 100 cc. and 4.3 mcg. per 100 cc., respectively, and the result of a 24 hour I^{131} tracer study was 8%. Unfortunately, because it was still not suspected that thyroid therapy would influence the hirsutism, no photographs were taken. The patient was returned to her physician with the suggestion that he prescribe ¼ grain (0.016 gm.) of thyroid a day and that he increase this dose by another ¼ grain each day at two week intervals until tolerance was reached. The referring physician decided that 1 grain (0.065 gm.) of thyroid was the daily maintenance dose, and the patient continued to take this amount of thyroid. Six months after the onset of thyroid therapy the patient was reexamined. The superfluous hair had disappeared completely, and the mother stated that a change in the hirsutism had been noted as early as three months after the onset of thyroid therapy. She did not believe that there had been any discernible alteration in the child's activity. The serum cholesterol level was 170 mg. per 100 cc.

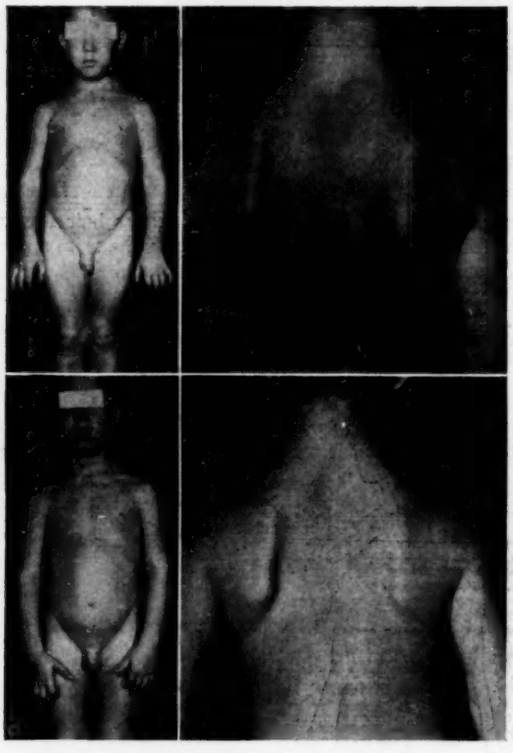


Fig. 2.—Patient in case 4. *A*, before thyroid therapy. *B*, six months after the beginning of therapy.

CASE 3.—A 3-year-old white girl complained of lethargy, short stature, constipation, and hirsutism. Her height was 34.5 in. (88 cm.) and weight 24.5 lb. (11 kg.). She was thin, malnourished, and extremely lethargic. Her skin was smooth and dry, and her complexion was pallid. She appeared younger than her stated age but had an extremely anxious facial expression. Her bone structure was fine, and marked protrusion of the abdomen was apparent. The head hair was fine and dry, and hirsutism of the type and distribution previously described was noted.

The result of 24 hour I^{131} tracer study was 1%, and the serum cholesterol and protein-bound iodine levels were 272 mg. per 100 cc. and 2.2 mcg. per 100 cc. respectively. Except for anemia (hemoglobin level 12 gm. per 100 cc.) the blood count was normal. Permission to photograph the patient was refused, because the parents felt that she was "too nervous." She was given ¼ grain (0.016 gm.) of thyroid a day, and the daily dose was increased by this amount at two week intervals until a maintenance dose of 3 grains (0.2 gm.) a day was reached. Eight months after the institution of therapy the patient was reexamined. The pulse rate had risen to 80 beats per minute from a previous level of 60, and general clinical improvement was obvious. The height had increased by 2 in. (5 cm.), and the superfluous hair had disappeared completely. The serum cholesterol level was 172 mg. per 100 cc.

CASE 4.—A 7-year-old white boy was referred with the diagnosis of hypothyroidism. He was lethargic, doing poorly in his school work, and had failed to grow normally for an indefinite number of years. Constipation was marked and laxatives were required three to four times each week to maintain bowel function. The patient's height was 43 in. (109 cm.) and weight 48 lb. (22 kg.). He appeared to be extremely dull mentally, and puffiness and pallor of the face were marked. Protrusion of the abdomen was noted, and the head hair was coarse and dry. Hirsutism of the type and distribution noted in the other patients reported on was seen in this youngster, and photographs were taken (fig. 2*A*).

The protein-bound iodine level was 2.9 mcg. per 100 cc., and the serum cholesterol level was 310 mg. per 100 cc. The 24 hour I^{131} uptake was 5%. One-quarter grain (0.016 gm.) of desiccated thyroid a day was administered, and the dose was increased by this amount every two weeks until a dose of 2½ grains (0.15 gm.) a day was reached. The patient became overactive and difficult to manage, and his pulse rate increased to 100 beats per minute from an initial rate of 60, whereupon the dose of thyroid was reduced to 2 grains (0.12 gm.) a day. Six months after the initiation of thyroid therapy the patient was rephotographed, since almost all of the superfluous hair had disappeared (fig. 2*B*). An increase of 2 in. (5 cm.) in height was noted, although the weight remained the same. The improvement in his physical and mental status was gratifying. The serum cholesterol level was 190 mg. per 100 cc.

CONCLUSIONS

Unusual but typical hirsutism, involving the back, shoulders, outer aspects of the arms and legs, and to a lesser degree the sides of the face, may be a manifestation of hypothyroidism in children, since four hypothyroid patients with this type of hair growth were either completely or almost completely relieved after six to eight months of therapy with desiccated thyroid.

ADDENDUM

Since this paper was submitted two additional patients with hirsutism have come under treatment.

3521 N. Broad St. (40).

Ballistocardiography.—The grossly abnormal ballistocardiogram of a patient known to have a myocardial infarct and experiencing frequent attacks of angina pectoris may become perfectly normal within seconds of voluntarily holding the breath. Before ballistocardiography can have real clinical meaning, such a dramatic phenomenon as this must be conclusively explained. Let me summarize what new knowledge is likely to be acquired by the ballistocardiographer in the future. Some progress will come from completion . . . of follow-up studies already begun by us and others upon patients and presumably normal controls. . . . We hope these follow-ups will reveal that the coronary artery circulation of normal controls with normal ballistocardiograms remain efficient longer than those of controls with abnormal records. Statistically significant figures to make these hopes facts will not be available until such long-term studies, utilizing the conventional and the newer aperiodic ballistocardiographic techniques, are completed. The ideal line of progress should connect definitely the physiologic events in the cardiovascular generator with the component waves of as faithful a force ballistocardiogram as can be recorded. When this ideal is attained, then ballistocardiography will provide not only information upon the clinical cardiovascular efficiency not obtainable by other means but also information which is desperately needed by the clinician to guide him both in his therapy and in his predictions of the outcome of his patient's ills.—M. L. Singewald, M.D., Ballistocardiography: Past, Present, Future, *Annals of Internal Medicine*, December, 1954.

RECOVERY OF PATIENT IN PROLONGED SHOCK AFTER ARTERENOL THERAPY

Buford Hall, M.D., Chicago

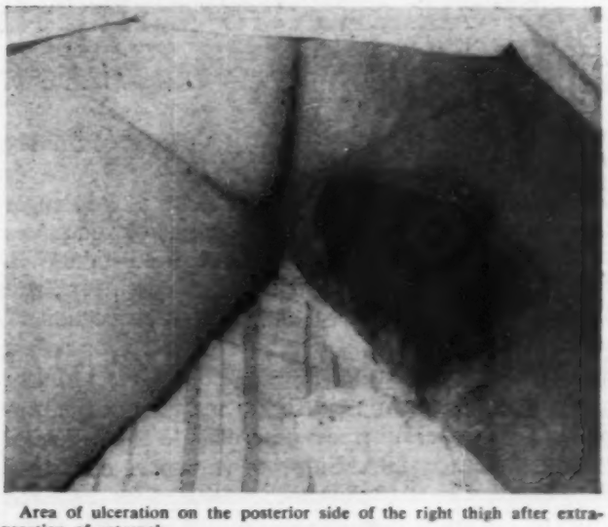
Since the levoisomer of arterenol (nor-epinephrine) became available in 1948, there has been an increasing number of reports attesting to the value of this sympathomimetic amine in the treatment of shock. In rare instances, intravenous infusion of the drug has been necessary for as long as four,[1] five,[2] six,[3] or seven and one-half [4] days. There is brief mention of one patient with bacteremic shock who received 532 mg. of the medicament in 21 days.[5] Unpublished reports to the manufacturers [6] describe one patient who received 448 mg. in 16 days and another who required 236 mg. in 10 days. The case described below required 22 days of treatment and a total of 1,452 mg. of arterenol base in about 115 liters of fluid.

REPORT OF A CASE

A 53-year-old white housewife was admitted to the Good Samaritan Hospital on March 14, 1954, and discharged on May 5, 1954. Cholecystectomy had been performed in 1933 and choledocholithotomy in 1946. In 1947, jaundice occurred, and three weeks later choledochotomy, transverse duodenotomy, and exploration of the ampulla of Vater were carried out uneventfully.

Except for a moderate ventral hernia at the site of previous surgery, the patient got along fairly well until one month prior to the present admission, when pruritus, epigastric and right scapular pain, nausea, and vomiting appeared. There was no evidence of jaundice, and physical examination revealed only a ventral hernia. Complete blood cell counts and urinalysis were normal. On March 15, 1954, exploration of the biliary tree and repair of the ventral hernia were carried out under gas-oxygen-ether anesthesia by Dr. A. E. Grimes. The operative chart showed a stable, normotensive blood pressure throughout. Over 50 stones were removed from the common bile duct and hepatic radicles. A T-tube was led out through a stab wound. After the operation, the patient had severe nausea, occasional retching and vomiting of bile-stained material, and generalized weakness; she was afebrile. On March 25, hypotensive collapse developed, and the blood pressure was found to be unobtainable. Blood amylase was normal. After the foot of the bed was elevated, blood pressure rose to low normal levels. The patient received 500 cc. of whole blood, but nausea persisted. Four days later, on March 29, another episode of shock occurred. The patient was again placed in a head-down position, and she rallied. Whole adrenal cortical extract, 5 cc. injected intramuscularly every four hours for seven doses, was started. She received atropine sulfate, 1/75 grain (0.95 mg.) every six hours, without great improvement.

Examination of the patient on March 30 revealed a blood pressure of 90 to 100 mm. Hg systolic and 60 to 70 mm. Hg diastolic in each arm. Pulse rate was 100 beats per minute and regular. Examination was otherwise normal, except for slight tenderness in the right upper quadrant of the abdomen. There was no pigmentation characteristic of Addison's disease. The T-tube was draining well. There were 45,800 white blood cells per cubic millimeter of blood, of which 91% were polymorphonuclear neutrophils. The eosinophil count was zero, and an electrocardiogram was normal. The total serum bilirubin was 0.9 mg. per 100 cc., and the thymol turbidity was 1 unit. The fasting blood sugar was 170 mg. per 100 cc. Because of a fall in blood pressure to 80/50 mm. Hg, with the clinical picture of shock, arterenol therapy was started at 9 p. m. on March 30, with a dose of 4 mg. of levarterenol (Levophed) bitartrate in a solution of 1,000 cc. of 5% dextrose in water. When about 40 drops per minute of this preparation were injected intravenously, the blood pressure was maintained at about 120/90 mm. Hg. Thus began a program of massive and prolonged intravenous arterenol therapy, which was continued until April 22. The concentration of the drug was gradually increased in an attempt to reduce the large volume of intravenous fluids necessary (up to 12 liters a day). Concentrations up to 24 mcg. per cubic centimeter were used at a rate of 40 to 60 drops per minute (about 1.4 mcg. per kilogram per minute). The largest daily dose was 144 mg. Repeated attempts to stop the infusion of arterenol resulted in an immediate drop in blood pressure to 50 to 60 mm. Hg systolic. Finally, on April 16, large amounts of plasma were given intravenously on an empirical basis. The patient received 3,000 cc. of plasma during 4.5 hours, which resulted in mild pulmonary edema. However, during this rapid plasma infusion, a blood pressure of 70 to 80 mm. Hg systolic was obtained for the first time without arterenol. Smaller amounts of plasma previously had even less effect. Neither mephentermine (Wyamine) sulfate nor methamphetamine (Methedrine) hydrochloride in doses up to 60 mg. in each intramuscular injection had any discernible effect on the blood pressure. After the large plasma infusion, arterenol was required intermittently in smaller amounts for five more days.



Area of ulceration on the posterior side of the right thigh after extravasation of arternol.

During the 22 days of therapy, it was necessary to change the site of the infusion several times because of plugging of the needle or extravasation of the fluid subcutaneously. Inlying needles or metal cannulas were used. Extravasation resulted in superficial sloughs of the skin, all of which healed by the time

From the Good Samaritan Hospital, Lexington, Ky.

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6. Slevin, D.: Personal communication to the author.

the patient was discharged, except for a large area on the posterior aspect of the right thigh (see figure). No tachycardia was observed during the course of therapy, nor was there any evidence of unusual mental stimulation; however, there was an episode of mild, intermittent, generalized, clonic convulsions on April 14 that lasted about an hour, during which time the blood pressure and pulse were normal. Since therapy with adrenal cortical extract had been initiated at the onset, it was thought advisable to continue intramuscular treatment with cortisone for 17 days, although there was never any convincing evidence of adrenal cortical insufficiency. The patient also received large amounts of the tetracycline group of antibiotics, penicillin, and streptomycin. A total of 2,500 cc. of whole blood and 8,250 cc. of plasma were administered while the patient was hospitalized. Insulin was given during the first two weeks of arterenol therapy to control hyperglycemia, which reached a maximum of 305 mg. per 100 cc. On April 29, the fasting blood sugar was 115 mg. per 100 cc., and no further insulin was required. Hypoproteinemia was a prominent feature of the illness prior to plasma infusion. The serum albumin was 2.1 gm. and the serum globulin was 1.3 gm. per 100 cc. on April 5. Large amounts of supplemental potassium were necessary because of the large volume of intravenous glucose used and because the patient was unable to retain food. Azotemia was present only during the first four days of arterenol therapy, when urine output was rising from the oliguric levels associated with shock. Numerous studies of other blood electrolytes revealed only the temporary fluctuations incident to the problem of maintaining the proper composition of intravenous fluids. When the patient was discharged she was able to resume a normal diet without complaints. She was afebrile, and the blood pressure was 120/80 mm. Hg. Five months later she was walking about her home and the ulcerated area on the right leg had almost completely healed.

SUMMARY

Prolonged shock of undetermined cause developed in a patient two weeks after removal of common duct stones. Intravenous therapy with arterenol was necessary for 22 days; a total of 1,452 mg. (363 ampuls) of levarterenol base was used. This is the longest duration of therapy and the largest total dosage described to date. Full recovery was complicated by a large skin ulceration at the site of subcutaneous extravasation of the drug. On the 15th day of therapy, convulsive twitching occurred for one hour and subsided without change in therapy. There were no other side-effects attributable to the drug.

1853 W. Polk St. (12).

ADDICTION TO MEPERIDINE (DEMEROL) HYDROCHLORIDE

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and
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Many physicians appear to be unaware of the danger of addiction to meperidine. Since numerous inquiries concerning meperidine addiction are received at the U. S. Public Health Service Hospital at Lexington, Ky., and since it has been reported that a large proportion of meperidine addicts are members of the medical or closely allied professions, further investigation of the problem seemed warranted. In 1939 Eisleb and Schaumann [1] reported that meperidine possessed definite analgesic and spasmolytic properties. Subsequent papers confirmed these findings. In 1940 clinical communications suggested that meperidine might be habit forming.[2] These reports were made by von Brucke [2a] and Kucher.[2b] The latter noted withdrawal symptoms when the medicament was withheld and clonic muscular twitching after the administration of large doses. Because of these and similar observations reported in the literature, Himmelsbach,[3] on the basis of experiments with former morphine addicts as subjects, found that meperidine had addictive properties.

There has been considerable controversy, as reviewed by Isbell and Fraser,[4] as to whether meperidine would produce addiction when used in the ordinary practice of medicine. Some investigators have minimized the addiction liability of the drug. Batterman [5] reported that the drug had little addiction liability and stated that he did not feel that persons who had previously not been addicted to other drugs would become addicted to meperidine. Noth, Hecht, and Yonkman [6] did not feel that sufficient evidence was present to say whether "primary" meperidine addiction was possible in subjects who gave no history of habituation or dependency on other drugs. Curry [7] reported that "clinicians who have had extensive experience with meperidine hydrochloride have concluded that for routine use the addiction liability is minimal and certainly less than that with morphine." On the other hand, Wieder [8] in 1946 reported three cases of meperidine addiction. Two of the patients he considered to be "primary" meperidine addicts. Anslinger [9] in 1946 in a letter to the Editor of THE JOURNAL of the American Medical Association briefly described 14 cases of meperidine addiction, 8 of which appeared to be "primary." Isbell and White [10] in 1953 emphasized the importance of meperidine addiction among physicians and nurses.

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1. Eisleb, O., and Schaumann, O.: Dolantin, ein neuartiges Spasmolytikum und Analgetikum (Chemisches und Pharmakologisches), Deutsche med. Wchnschr. **67**: 967 (June 16) 1939.

2. (*a*) von Brucke, S.: Ueber Dolantinabusus und einen Fall von Dolantindelir, Wien. klin. Wchnschr. **53**: 854 (Oct. 18) 1940. (*b*) Kucher, I.: Zwei Falle von Dolantinsucht, Klin. Wchnschr. **19**: 688 (July 6) 1942.

3. Himmelsbach, C. K.: Studies of the Addiction Liability of "Demerol" (D-140), J. Pharmacol. & Exper. Therap. **75**: 64 (May) 1942; Further Studies of the Addiction Liability of Demerol (1-Methyl-4-Phenyl-Piperidine-4-Carboxylic Acid Ethyl Ester Hydrochloride), ibid. **79**: 5 (Sept.) 1943.

4. Isbell, H., and Fraser, H. F.: Addiction to Analgesics and Barbiturates, J. Pharmacol. & Exper. Therap. **99**: (pt. 2) 355 (Aug.) 1950.

5. Batterman, R. C.: Demerol, A New Synthetic Analgesic: Its Indications as a Substitute for Morphine, Connecticut M. J. **8**: 13 (Jan.) 1944; Clinical Effectiveness and Safety of a New Synthetic Analgesic Drug, Demerol, Arch. Int. Med. **71**: 345 (March) 1943; The Treatment of Arthritic Pain with Demerol, a New Synthetic Analgesic, Ann. Int. Med. **22**: 382 (March) 1945.

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8. Wieder, H.: Addiction to Meperidine Hydrochloride (Demerol Hydrochloride): Report of Three Cases, J. A. M. A. **132**: 1066 (Dec. 28) 1946.

9. Anslinger, H. J.: Case Histories Involving Addiction to Demerol, Correspondence, J. A. M. A. **132**: 43 (July 13) 1946.

10. Isbell, H., and White, W. M.: Clinical Characteristics of Addictions, Am. J. Med. **24**: 558 (May) 1953.

Isbell [11] found that withdrawal of meperidine from four patients who had never been addicted to any other drug was followed by a definite abstinence syndrome, which did not differ quantitatively or qualitatively from that observed in two patients who became addicted to meperidine after having been addicted to opiates. Adequate doses of meperidine relieved symptoms of abstinence in all six patients.

Since meperidine became available in 1944, there has been a substantial increase in the production and consumption of the drug. In 1946, 7,710 lb. (3,470 kg.) were produced and 6,318 lb. (2,844 kg.) were consumed, while in 1952, 15,688 lb. (7,060 kg.) were produced and 17,697 lb. (7,965 kg.) were consumed.[12] Concomitantly, the number of meperidine addicts admitted to the U. S. Public Health Service Hospital in Lexington, Ky., has increased considerably.

METHODS

The material presented in this study was obtained by reviewing the records of all meperidine addicts admitted to the U. S. Public Health Service Hospital between July 1, 1950, and Sept. 30, 1953. The patients were classified as either "primary" or "secondary" meperidine addicts. A person was considered to be a "primary" meperidine addict if he (1) had never used any opiates or synthetic analgesics except meperidine; (2) was addicted to meperidine but, unlike those in the first group, had also received an occasional dose of an opiate or other synthetic analgesics, although never enough of the latter drugs to produce addiction; and (3) was originally addicted to meperidine but later became addicted to another narcotic either in addition to or instead of meperidine. "Secondary" meperidine addicts were persons who originally had been addicted to opiates or synthetic analgesics other than meperidine but who at the time of their most recent admission were addicted to meperidine either alone or in combination with opiates or other synthetic analgesics.

TABLE 1.—*Classification of Meperidine Addicts*

Types	Male		Female		Total	
	No.	% *	No.	%	No.	%
Primary Meperidine Addicts	168	36.76	120	26.26	288	63.02
Used meperidine only	132	28.88	86	18.82	218	47.70
Used meperidine plus nonaddicting amounts of other narcotics	29	6.35	28	6.13	57	12.48
First addicted to meperidine but changed to other narcotic	7	1.53	6	1.31	13	2.84
Secondary Meperidine Addicts	96	21.01	73	15.97	169	36.98

* Percentages based on entire sample of 457 patients.

CHARACTERISTICS OF MEPERIDINE ADDICTS

During a 39 month period 457 meperidine addicts were admitted. Of these, 288 (63%) were classified as "primary" meperidine addicts. Two hundred eighteen had a history of having used only meperidine. Fifty-seven were addicted only to meperidine but acknowledged having used opiates or other synthetic analgesics in quantities insufficient to produce addiction. The remaining 13 had been originally addicted to meperidine but, for a variety of reasons, later became addicted to opiates or other synthetic analgesics either in addition to or instead of meperidine. The most frequent reason given for this change to another drug was the development of toxic reaction to large doses of meperidine (table 1).

The percentage of women in the group of meperidine addicts was in sharp contrast to the percentage of women admitted to the hospital. In 1953, 25% of all addicts admitted were females and 75% were males. However, among the meperidine addicts 42% were females and only 58% were males. The average age of onset of primary addiction to meperidine in women was 34 years and, in men, 38 years, in contrast to opiate addiction, which usually begins in the late teens or 20's. The primary female addicts had used meperidine for an average period of 1.8 years and the males an average of 2.7 years prior to the time of their first admission to the hospital. The average age of the female patient primarily addicted to meperidine at the time of her first admission was 36 years, with a range of 21 to 72 years. The average age of the male patient primarily addicted to meperidine at the time of first admission was 41 years, with a range of 22 to 72 years. In general, the members of the secondary group had been addicted for a considerably longer period of time prior to their first admission. The male members of the secondary group had a history of using narcotics for an average of five years, while the females had a history of an average use of eight years. One of the most striking differences between meperidine addicts, both primary and secondary, and opiate addicts was the low incidence of non-Caucasian persons. Only 10 (2.2%) of the 457 meperidine addicts were Negroes. This is in marked contrast to the proportion (40%) of Negroes among opiate addicts admitted during this same period.

Patients in the U. S. Public Health Service Hospital are either voluntary patients who seek treatment of their own accord or prisoners who have been convicted of violating the federal narcotic laws. A higher percentage (91%) of the primary meperidine addicts admitted to the hospital were voluntary patients as compared to the addicts in general admitted to the hospital (84% voluntary). Meperidine addicts differed from opiate addicts in the number of admissions to the hospital. In the primary group, 237 (82%) had been admitted only once and 39 (13%) had been admitted twice, making a total of 95% who had been admitted only twice. Only 65% of all types of addicts admitted in 1952 were admitted for the first or second time. Not only do meperidine addicts tend to have fewer admissions to the hospital but more remain for the full period of treatment. One-third

11. Isbell, H.: Abstinence Symptoms in "Primary" Meperidine Addicts, to be published.

12. Cunningham, G. B.: Personal communication to the author.

of the voluntary patients addicted to meperidine remained for the full period of treatment, as compared to about one-fourth of all addicts.

REASONS FOR ADDICTION TO MEPERIDINE

The reasons given by the patients for becoming addicted to meperidine are presented in table 2. An outstanding finding was the high percentage (80%) of all meperidine addicts who gave chronic discomfort arising from some medical or psychiatric condition as being responsible for their addiction. In contrast, only 36% [13] of opiate addicts gave such histories. One hundred thirteen (67%) of the men and 61 (51%) of the women primary meperidine addicts gave discomfort resulting from chronic illnesses, including postoperative and post-traumatic pain, as the reason for the onset of their addiction. All but a small number of the women who gave postoperative pain as the reason for the onset of their use of meperidine had a history of polysurgery, ranging from 6 to 49 major surgical procedures. The female genital tract was the most frequent site of this surgery. The incidence of polysurgery was much less among the males. In the group of patients, both male and female, giving post-traumatic pain as the primary reason for their use of drugs, trauma was most commonly due to automobile accidents.

As would be expected from the complaints of the patients and the fact that synthetic analgesics are not readily available through illegal sources, the majority of the patients, both male and female, gave physicians as their principal source of narcotics. Of the male primary addicts, 125 (74%) stated that they received meperidine from physicians only. Twenty-four (14%) supplemented narcotics from physicians by forging prescriptions or filching the drugs from the hospital in which they were working. Nineteen (15%) did not divulge their sources of supply. Sixty (50%) of the women stated that they received their supply of drugs from physicians only. Twenty-six (22%) supplemented their supply of narcotics by forging prescriptions or by stealing narcotics. Fourteen (12%) claimed that they stole all of their narcotics from the hospital in which they were working. Nineteen (10%) did not divulge their sources of supply. The secondary meperidine addicts were similar to the primary group in this respect, except that they were more inclined to turn to other addicting drugs when their source of meperidine was threatened or cut off.

GEOGRAPHICAL DISTRIBUTION

The U. S. Public Health Service Hospital at Lexington, Ky., is the only federal hospital that will admit female patients addicted to narcotics. As a result of this the female patients come from all sections of the United States. Male patients admitted to the Lexington hospital come from the area east of the Mississippi River. Male addicts west of the Mississippi River go to the U. S. Public Health Service Hospital in Fort Worth, Texas. This explains some of the differences in the geographical distribution of the male and female patients in this study. Nearly 50% of meperidine addicts, both primary and secondary, reside in a rather limited area of the United States, the southeastern states. Forty-four per cent of male primary meperidine addicts were residents of Virginia, the Carolinas, Georgia, Florida, Alabama, Mississippi, Tennessee, Kentucky, Louisiana, and Arkansas. The New England and Middle Atlantic states, despite their large populations, provided only 30% of this group of patients, and the lake states contributed only 18%. Thirty-six per cent of primary female meperidine addicts came from the southeastern United States. New England and the Middle Atlantic states contributed 23% and the lake states 19%. Ten per cent came from the southwestern states and the remaining 5% from the plains and Rocky Mountain states. An even larger percentage of the male (55%) and female (42%) secondary addicts came from the southeastern section of the United States. In contrast, 22% of

TABLE 2.—*Reasons Given by Meperidine Addicts for Onset of Addiction*

Reason Given	Primary Addicts				Secondary Addicts			
	Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%
Chronic depression, tension, anxiety, and fatigue *	29	17.3	41	34.2	5	5.2	14	19.2
Alcoholic "hangover"	24	14.3	7	5.8	21	21.9	5	6.9
Postoperative pain	14	8.3	8	6.7	15	15.6	19	26.0
Post-traumatic pain	18	10.7	9	7.5	15	15.6	3	4.1
Chronic medical complaints	81	48.2	44	36.7	25	26.1	20	27.4
Related to:								
Vague abdominal pain	19	....	16	....	5	....	5	....
Asthma	16	....	3	....	3	....	3	....
Headache	12	....	12	....	3	....	6	....
Cardiac complaints	7	....	4	....	5	....	..	....
Vague back pains	4	....	..	....	..	....	..	....
Intractable pain due to unknown cause	4	....	..	....	..	....	..	....
Tabes dorsalis	2	....	..	....	..	....	..	....
Arthritis	2	....	..	....	2	....	..	....
Urinary complaints	2	....	..	....	..	....	..	....
Chest pains	2	....	..	....	3	....	1	....
Miscellaneous conditions	11	....	9	....	4	....	5	....
Symptoms of psychosis	..	....	1	0.8	1	1.0	..	....
No reason given	2	1.2	10	8.3	14	14.6	12	16.4
Total	168	100.0	120	100.0	96	100.0	73	100.0

* 26 women in this category who were primary addicts, or 21.7%, and 5 women who were secondary addicts, or 35.7%, also complained of premenstrual tension and dysmenorrhea.

13. Pescor, M. J.: A Statistical Analysis of the Clinical Records of Hospitalized Drug Addicts, Pub. Health Rep., supp. 143, 1943.

all addicts admitted in 1953 came from this section of the country. The size of the communities in which meperidine addicts resided also differed from that of opiate addicts. Over one-third of all persons addicted to meperidine came from communities of less than 10,000 population, and over one-half came from areas under 50,000. The majority of persons addicted to other drugs came from cities of one million population or greater.

OCCUPATION OF PATIENTS

One of the most interesting findings was the number of persons from the medical or ancillary professions who were addicted to meperidine. Among all 457 meperidine addicts there were 71 physicians, 5 osteopathic physicians, 2 dentists, 79 registered nurses, and 29 persons from ancillary professions, making a total of 186 patients intimately associated with the medical profession (table 3). The larger number of physicians and nurses in this group raised the question as to why persons with all types of narcotics available to them should select a drug not preferred by most addicts and continue to use it in preference to other addicting drugs. A number of physicians and nurses who had been addicted to meperidine were interviewed in an effort to answer this question. Their answers are summarized as follows: 1. All of the persons interviewed were vaguely aware of the dangers of becoming addicted to meperidine but regarded it as less likely to produce any toxic effects and less likely to produce addiction; if they should become addicted, they believed it would be easier to discontinue the use of meperidine than any of the commoner opiates. 2. Meperidine was more readily available; many hospitals take less precaution in safeguarding their supplies of meperidine than their supplies of other narcotics. Thefts of meperidine are consequently easier to conceal. 3. Many felt that the stigma attached to using meperidine was much less than that attached to the use of opiates and consequently less guilt was felt by the user of meperidine. 4. Several addicts in the group professed to be "allergic" to all the usual opiates and could tolerate only meperidine. Questioning revealed that the word "allergic" usually meant unpleasant effects such as nausea, vomiting, drowsiness, and in a few instances hives and other true allergic phenomena. 5. They felt that the observable signs of addiction to meperidine were less obvious to others than the signs of addiction to opiates.

COMMENT

The data gathered in this study leave no doubt that addiction to meperidine does occur. Furthermore, persons who have never been addicted to opiates do become addicted to meperidine and have symptoms of abstinence after withdrawal of the drug. The incidence of meperidine addiction, as reflected by admissions to the U. S. Public Health Service Hospital, seems to be increasing. In 1946-1947 only 6 meperidine addicts entered that institution, whereas in 1950 to 1953, the rate had risen to 144 meperidine addicts admitted yearly. The fact that the majority of meperidine addicts were given the drug and later maintained on it by physicians as part of the therapy of some chronic psychiatric or medical condition seems to indicate that the medical profession may not be sufficiently aware of the danger of addiction to this drug. This group of patients addicted to merperidine is closely related to the so-called medical addict as studied by Rayport.[14] His experience demonstrated that analgesics can be successfully withdrawn from medical addicts, and, in a "drug-free" environment, such as our hospital provides, can almost invariably be managed comfortably without resorting to narcotics. Failure to appreciate the addictive properties of meperidine may also in part account for the high proportion of physicians, nurses, and members of allied professions found among meperidine addicts. It should be emphasized that the same precautions should be taken in prescribing meperidine as are used in prescribing morphine.

SUMMARY

Between July 1, 1950, and Sept. 30, 1953, 457 meperidine addicts were admitted to the U. S. Public Health Service Hospital at Lexington, Ky. Of this group, 288 (63%) were primary meperidine addicts and 169 (37%) were secondary meperidine addicts. Of the total group, 264 (68%) were men and 193 (42%) were women. The average age of onset of primary addiction to meperidine was 34 years in women and 38 years in men. The female members of the primary group had been addicted on the average of 1.7 years prior to admission to the hospital and the males 2.8 years. Only 10 of the 457 patients were Negroes. Of the primary group, 113 (67%) of male addicts gave discomfort resulting from trauma or a chronic medical condition as the chief reason for the onset of their addiction. Sixty-one (51%) of the primary female addicts gave physical discomfort as the chief reason for the onset of their addiction. The majority of these patients, both male and female, obtained their drugs from physicians. About 50% of the patients addicted to meperidine, primarily and secondarily, came to this hospital from small communities in the southeastern section of the United States. Nearly 50% of the patients were physicians, nurses, or other persons closely related to the medical profession.

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TABLE 3.—*Occupations of Meperidine Addicts*

Occupation	Primary Addicts				Secondary Addicts			
	Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%
Physicians	50	29.7	2	1.7	19	19.8	..	....
Registered nurses	3	1.8	49	40.8	..	....	27	37.0
Osteopaths	5	3.0	..	....	..	....	..	....
Dentists	2	1.2	..	....	2	2.1	..	....
Ancillary medical professions	3	1.8	15	12.5	5	5.2	6	8.2
Nonmedical professions	9	5.4	1	0.8	4	4.2	1	1.4
Business	29	17.3	3	2.5	16	16.6	3	4.0
Clerical workers	8	4.8	4	3.3	1	1.0	4	5.5
Skilled trades	32	19.0	3	2.5	23	24.0	..	....
Unskilled trades	5	3.0	3	2.5	5	5.2	10	13.7
Miscellaneous	11	6.5	32	26.7	10	10.4	21	28.8
No occupation	11	6.5	8	6.7	11	11.5	1	1.4
Total	168	100.0	120	100.0	96	100.0	73	100.0

14. Rayport, M.: Experience in the Management of Patients Medically Addicted to Narcotics, to be published.

CLINICAL NOTES

TETANUS IN HEROIN ADDICTS

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Many interesting and unusual causative factors of tetanus are discussed in the literature. Tetanus due to the use of injected gelatinized serum as a hemostatic agent was reported by Chauffard (18 cases) and Dieulafoy (5 cases) in 1909 to the Académie de Médecine of Paris and was extensively discussed by Dieulafoy[1] in his classic "Textbook of Medicine" in 1911. Reports of other unusual cases can be found in the literature, such as a case of tetanus, reported by Tudor,[2] that developed as a result of a foreign body in the nose, and the now very rare cases in newborn infants.[3] The purpose of this paper is to call attention to another problem in the development of tetanus that has received very little attention, namely, its occurrence in heroin addicts. It is a problem of prophylaxis and of treatment, a problem with many social implications.

Many reports can be found in the literature that deal with the development of malaria,[4] septicemia and bacterial endocarditis,[5] and viral hepatitis[6] in heroin addicts, due to the promiscuous use of needles and syringes, but only few and scattered reports deal with the development of tetanus in heroin addicts. The first reference in the literature to the development of tetanus in a drug addict was an editorial note in *Lancet* in 1876[7]; it concerned a morphine addict. Meldon,[8] in 1879, reported a fatal case of tetanus in a drug addict, probably from needle puncture. Osburne[9] and Palmer[10] described two cases in 1892. Doane,[11] in 1924, reported one case in a heroin addict and stated that in eight years he had encountered 3 such cases in 4,000 patients with heroin addiction seen by him. A review[12] of 22 cases of tetanus that occurred in 33 years (1916-1949) in the Royal Victoria Hospital includes one case due to infection at the site of self-injection in a heroin addict. In the 15 patients with tetanus treated at the Rhode Island Hospital between 1930 and 1950, one case is reported[13] to have been due to the use of an unsterile needle by a heroin addict.

CASES STUDIED

In contrast, of 22 patients with tetanus seen at the Cook County Hospital in a 20 month period, 12 patients were heroin addicts who gave a history of having used unsterile needles and syringes. The occurrence of such a large number of cases in such a short period of time has enabled us to observe what seems to be a typical pattern of symptoms, different from the usual symptoms in cases of tetanus that develop after burns or trauma without the added complication of heroin addiction. Tables 1 and 2 summarize all the cases of tetanus treated at the tetanus service of the Cook County Hospital during the 20 month period from December, 1952, to July, 1954, during which time 22 patients with tetanus were admitted. Of this number, 12 (54.5%) had acquired the disease by the use of unsterile hypodermic needles for self-injection of heroin (table 1). Of the remaining 10 patients (45.5%), 3 had stepped on a nail and sustained a puncture wound of the foot, 2 had been burned, 4 had infected abrasions or lacerations, and one had a compound fracture (table 2). Among the heroin addicts with tetanus, eight were in the third decade of life, and one was in the fourth decade; thus 75% of cases were in patients in the 20's and 30's; however, among the nonaddicts, 60% of patients were over 40, and the others were equally distributed in the first four decades of life. Of the heroin addicts, 9 were females, and only 3 were males; all 12 heroin addicts treated for tetanus were Negroes.

TABLE 1.—*Total Cases of Tetanus* in Heroin Addicts with No Prior Immunization*

Case	Age and Sex	Incubation Period, Days	Initial Complaint	Temperature on Admission, F	Temperature in 36-48 Hr., F	Blood Pressure on Admission, Mm. Hg	Onset of Coma, Hr.
1	30 F	?	Stiff neck and back	100.4	Died	104/70	10
2	42 F	?	Stiff neck	100	101.6	.....	24
3	30 M	?	Stiff neck and back	98.4	101	150/100	36
4	21 F	?	Stiff neck	98.6	105	120/65	20
5	55 M	6	Stiff neck and back	100	103.2	150/100	12
6	26 F	?	Trismus	100.5	100.2	140/80	48
7	42 F	?	Stiff neck and back	98.6	101.6	115/60	24
8	38 M	?	Stiff neck and back	98.6	Died	.....	3
9	26 F	?	Stiff neck and back	98.6	101.6	140/80	48
10	25 F	?	Stiff neck	98.6	102	120/60	24
11	23 F	?	Stiff neck and back	98.6	105	136/82	6-9
12	25 F	?	Stiff neck	99	103	115/19	36

* The source of infection in every case was thought to be a contaminated hypodermic needle; most patients had had numerous injections at various times.

From the Tetanus Service of the Cook County Hospital.

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The question of what constitutes an effective prophylactic dose of tetanus antitoxin in case of injury may be answered by pointing out that two of the patients in this series had received 1,500 units of tetanus antitoxin, and another had received 3,000 units of tetanus antitoxin, immediately after injury; still, in all three tetanus ran its full clinical course, in one patient causing death. We therefore believe that the active prophylactic dose should be no less than 5,000 units. The incubation period was difficult to evaluate in the heroin addicts, since they all had multiple puncture wounds and abscesses that could be dated to varying periods of time before clinical tetanus developed. Among the nonaddicts with a definite history of a single injury preceding the onset of tetanus symptoms, the time interval was between 7 and 13 days, with a mean of 10 days.

In all but one of the heroin addicts with tetanus, the initial complaint was pain or stiffness in the neck or back, followed in 12 to 24 hours by trismus; in all but two of the nonaddicts, the first symptom was the classical initial complaint, trismus. In the heroin addicts, there was an early rise of temperature to 103 to 105 F in 36 to 48 hours after the onset of symptoms. The temperature of the nonaddicts remained consistently at a lower elevation except as a preterminal event in the fatal cases or unless pneumonia developed. In the heroin addicts there was an early onset of coma, in 12 to 36 hours after the initial appearance of tetanus symptoms; the nonaddicts remained alert except as a preterminal event in fatal cases.

The mortality rate was 100% among the heroin addicts, compared to 40% among the nonaddicts. This extremely high death rate in heroin addicts with tetanus cannot be satisfactorily explained. The patients were all treated alike except for the last six patients who were heroin addicts; an attempt was made to treat them for heroin withdrawal along with the standard tetanus therapy; however, there was no change in the clinical course or in the final outcome of their disease. All patients with tetanus admitted to the Cook County Hospital are immediately referred to the tetanus service, and management is carried out by members of the tetanus team under the direction of one of us (A. L.). Therefore, management of this series of cases has been standardized, and the results should reflect only the variations of the disease itself.

TABLE 2.—*Tetanus in Nonaddicts*

Case	Age	Sex	Incubation Period, Days	Source of Infection	Initial Complaint	Temperature on Admission, F	Temperature in 36-48 Hr., F	Blood Pressure on Admission, Mm. Hg	Prior Immunization	Onset of Coma	Complications	Outcome
1	60	M	12	Nail wound in foot	Trismus	100.6	100	182/138	None	None	None	Recovered
2	46	M	11	Laceration of hand	Trismus	99.6	100.4	140/80	None	None	None	Recovered
3	15	M	9	Laceration of hand	Stiff neck	98	100.6	130/70	1,500 U	None	None	Recovered
4	33	F	13	Nail wound in foot	Stiff neck and back	99	104	.....	1,500 U	24 hr.	Pneumonia	Died
5	54	M	11	Burns	Trismus	101	102.4	120/70	3,000 U	None	None	Recovered
6	45	F	12	Abrasion of scalp	Trismus	100.5	102	180/140	None	None	None	Recovered
7	56	F	5	Nail wound in foot	Trismus	98.6 (later: 104.5)	100.4	.....	None	None	Pneumonia	Died
8	9	M	11	Abrasion of knee	Trismus	100.6	100.4	.....	None	None	None	Recovered
9	39	M	8	Burns	Trismus	102	101	160/94	None	11 days	Third degree burns	Died
10	25	F	7	Compound fracture	Trismus	99.4	100.6	140/90	None	None	None	Died

TREATMENT

The general management consists of putting the patient in a dark, quiet room. A board is placed under the mattress, and restraints are made available, to be used if necessary. Special 24 hour nursing care is provided. The patient is given a cleansing enema immediately, and a permanent rectal tube is inserted if tribromoethanol (Avertin) is to be given for sedation. The patient is given a skin test for sensitivity to tetanus antitoxin, with a 1:1,000 dilution of tetanus antitoxin. If the skin test is negative, 40,000 units of tetanus antitoxin is administered intravenously in 250 cc. of saline solution, to which 1 cc. of 1:1,000 solution of epinephrine (Adrenalin) has been added. At the same time, 40,000 units of tetanus antitoxin is administered intramuscularly. If the patient is sensitive to the antitoxin, the 80,000 units is divided into small doses. No spinal puncture is done unless meningitis is suspected. Penicillin is given, either in the aqueous crystalline form, 400,000 units intravenously three times a day, or as procaine penicillin, 600,000 units intramuscularly once a day. A consultation is obtained immediately with physicians from the nose and throat service, to alert that service for the possible need for a tracheotomy if the indication arises.

For sedation, pentobarbital (Nembutal), 3 grains (0.2 gm.), is given rectally, every four hours if necessary. If this is ineffective in controlling muscle spasms, tribromoethanol is administered rectally; the usual dose is 35 mg. per kilogram of body weight, made up in a 0.5% solution. The dosage is increased to 50 mg. per kilogram if necessary; the tribromoethanol is kept at 95 F to prevent crystallization. In case of acute laryngeal spasms, amytal sodium is slowly given intravenously until the spasm subsides. The last six heroin addicts treated for tetanus were also treated for withdrawal of heroin; amidon (Dolophine) hydrochloride, 5 to 10 mg. every three hours, was given. The heroin addicts were also kept in Trendelenburg position, to obviate the necessity of aspirating secretions, since they all lapsed into coma early in the course of illness.

SUMMARY

At the Cook County Hospital during the 20 month period from December, 1952, to July, 1954, 12 of the 22 patients treated for tetanus were heroin addicts. In heroin addicts, the initial complaint was usually stiff neck or stiff neck and back, rather than trismus, the

typical initial complaint in nonaddicts. Addicts had higher fever and earlier onset of coma than nonaddicts, in whom high fever and coma did not occur except as preterminal events in fatal cases. The mortality rate of tetanus in heroin addicts was 100%, as compared to 40% in nonaddicts. Since three heroin addicts had received standard doses of antitoxin (1,500 or 3,000 units) without apparent effect, a standard prophylactic dose of 5,000 units of tetanus antitoxin is recommended. Intensive research is needed in the treatment of heroin addicts, particularly in regard to withdrawal of heroin.

ADDENDUM

Since this paper was written, an additional case of tetanus in a heroin addict has been observed; it deserves mention here because it is the only such case observed in our tetanus service in which the patient recovered. The early course and management of this patient were different from the early course and management of other heroin addicts with tetanus in our series, although the symptoms were the same. The patient was a 30-year-old Negro woman admitted to the surgical service of the Cook County Hospital because of severe cellulitis of the left arm resulting from the use of contaminated hypodermic needles for self-injection of heroin. She had been a heroin addict for six years and had had no previous tetanus immunization. Although there were no signs or symptoms of tetanus at the time of admission, she was given 10,000 units of tetanus antitoxin intramuscularly, after a negative skin test. Five days after admission, she began to complain of generalized aches and pains, which were believed to be withdrawal symptoms, and withdrawal therapy was begun, with use of Sceleth's mixture:

Scopolamine hydrobromide, ¼ grain (0.015 gm.)
Pilocarpine hydrochloride, 2½ grains (0.16 gm.)
Ethylmorphine (Dionin) hydrochloride, 15 grains (0.97 gm.) or Morphine, 5 grains (0.32 gm.)
Fluid extract of cascara sagrada, 20 cc.
Alcohol, 60 cc.
Water, to make 120 cc.

Later that same day her neck and back became stiff, and her temperature rose to 102 F; she was transferred to the tetanus service, with the diagnosis of tetanus. Routine tetanus management and therapy, as described above, were started, including the use of 80,000 units of tetanus antitoxin. In 24 hours the patient's temperature had risen to 105 F, and she was comatose and was having convulsive spasms; tracheotomy was necessary. Two days after the onset of tetanus symptoms, administration of corticotropin (ACTH) was begun. The patient received 40 units a day intravenously for the first three days; then the dose was gradually reduced over a period of 10 days, and for the last 6 days of this period it was given intramuscularly. The patient received a total of 220 units intravenously and 80 units intramuscularly over a period of 13 days. She showed definite improvement the day after corticotropin therapy was started, and at the present time she is doing well and awaiting discharge. Whether the corticotropin influenced her progress is questionable. We believe the 10,000 units of tetanus antitoxin she received at about the middle of the incubation period of her disease was the more important factor.

30 N. Michigan Ave. (2) (Dr. Levinson).

A UNIVERSAL NEUROSURGICAL HEADREST

Allan E. Bayless, M.D., Santa Monica, Calif.

The present headrest for neurosurgery evolved as a result of dissatisfaction with available models, which are limited in use and are unduly heavy and complex. Previously I had used a cerebellum rest for face-down positions, a ganglion rest for tic operations, and a third headrest for sitting positions when available, or, as was often the case, makeshift substitutes largely composed of adhesive tape. The necessity of using these various headrests in different hospitals, none with its own equipment, and the resultant difficulties of transporting them forced the resolution to develop a single, lightweight rest. Although versatility, simplicity, rigidity, and portability

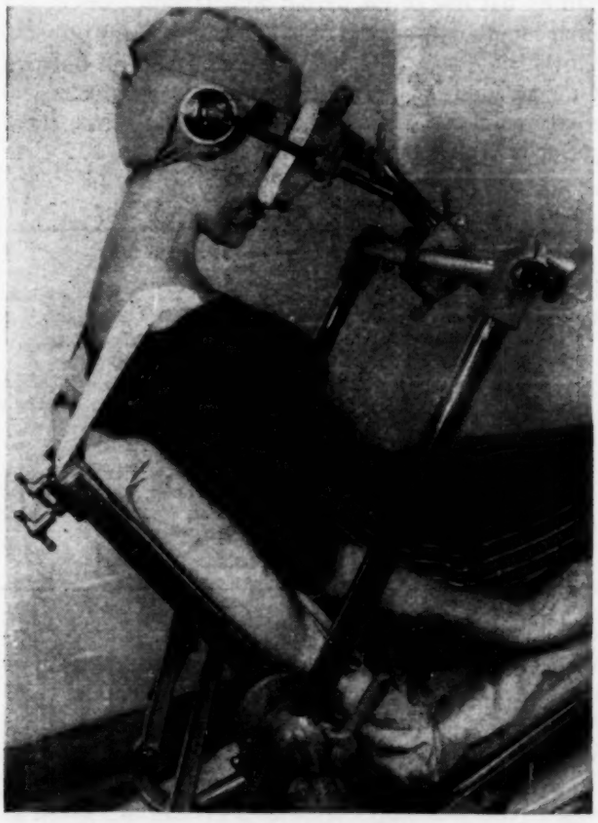

Fig. 1.—Headrest in position used for cervical or posterior fossa surgery or ventriculography.

were the prime considerations, it was felt that the rest should be adaptable to any standard operating table, and this feature has also been incorporated. As a result of conversations with other surgeons and with instrument manufacturers it was thought that there was a general need for a lightweight headrest to be used for any neurosurgical procedure. Economy is an advantage of this rest also and results not only from its simple construction but from the fact that additional headrests for specific opera-

Read at the Sixth Annual Conference of the Southern California Neurosurgical Society and the San Francisco Neurological Society, Pebble Beach, Calif., March 6, 1954.

Mr. Leslie Smith and Mr. Keith Havilland, industrial designers, helped in the development of this headrest.

The headrest is manufactured by V. Mueller & Company, 330 S. Honore St., Chicago 12, Ill.

tions are not necessary. Thus, a hospital with a limited budget for such specialized equipment might find the acquisition of this rest feasible, whereas the cost of multiple rests would be prohibitive.

The headrest is composed of aluminum castings and chromium-plated steel tubing to obtain maximum strength with minimum weight. The completely assembled headrest weighs less than 15 lb. (6.8 kg.). The castings are finished with chemically impervious baked enamel, and the padding is of cast porous rubber. The U-shaped face pad appears small compared to some existing rests, but the area of contact is actually greater, as the entire surface is used. This primary head support is supplied with three additional supports on adjustable arms. As can be seen

Fig. 2.—Headrest in position used for ganglion surgery.

from figures 1 and 2, there is free mobility of these arms in two dimensions, but it is not evident that there is also limited mobility in a lateral direction as a result of the construction of the lock in which they slide, e. g., in figure 2 the pad over the ear can be placed above or below the ear by moving the rod up or down in the lock when it is loosened. The rail locks have three functions. First, the rail clamp will fit the various widths and thicknesses of rails found on most operating tables. At times it is convenient to use this clamp upside down with the handle uppermost; this might be helpful when the rest is used for the traditional cerebellar position. The second function of this casting is to hold the steel tube. This is a "box-lock" tightened by large T-handles. The third function is to permit the tube to rotate freely with relation to the operating table rail and to lock the two at any point. This is permitted easily and securely by a toothed pawl operated by a handle, which, turned 45 degrees in either direction, forces the pawl into opposing teeth of a ring casting that is a part of that supporting the rail lock so that the two are securely locked together. The handle is shown engaged in figures 1 and 2. In practice the lock is placed on the operating table at the appropriate spot and tightened. Then the tubing, already assembled, is placed in its lock and tightened, and the whole rest is rotated as desired and fixed by engaging the pawls.

For the cerebellar position the auxiliary support arms can be removed, and the projections that remain will serve as useful mooring posts to secure any adhesive tape that might be used to further immobilize the head. The lateral supports might be used in this position to provide additional lateral stability if desired. Figure 1 shows a simple method of securing the shoulders with adhesive tape; occasionally oblique strips acting like the "spring lines" in boat-mooring practice will be necessary. In figure 2 the contralateral support, used to oppose the force of the cranial drill in ganglion operations on the opposite side, is shown. The top support shown in figure 2 proved to be too short and of improper curvature; this has since been corrected. The various other features are self-explanatory, but it should be mentioned that the horizontal tube has a projection on either end that fits into a slot in the casting so that the three tubes are maintained in a single plane even though rotating freely on both sides of the table in the process of setting up the headrest. Because the entire rest is supported on the head-end of the operating table, the patient's head may readily be lowered at any time, should it become necessary to do so, without disturbing the position of the patient, drapes, or headrest, simply by lowering the head of the table with the usual crank.

2200 Santa Monica Blvd.

Immunization Against Yellow Fever for International Travel.—Persons planning cruises, including world cruises, touching the yellow fever infected countries, Trinidad, Venezuela, Colombia, and Honduras, are reminded by the Division of Foreign Quarantine of the Public Health Service of the necessity of possessing a valid yellow fever certificate. A valid certificate will be required at the next port of call from anyone who has touched any of these countries. In addition, anyone expecting to stay in any part of Central America should have a yellow fever vaccination for his own protection. The yellow fever vaccination requirements are presently being strictly enforced in all Caribbean area ports on account of the appearance of yellow fever in many places where it had not been heard of for over 20 years. They are also strictly enforced by the Union of South Africa, Egypt, India, and Pakistan. Travelers coming directly from the United States can enter some, but not all, yellow fever infected areas without presenting a yellow fever vaccination certificate, but usually they cannot leave again without receiving yellow fever vaccination. Presentation of a valid certificate is compulsory for departure from Trinidad and Colombia, and probably also from certain ports of Venezuela. A yellow fever vaccination certificate does not become valid until 10 days after vaccination (in India and Pakistan, after 12 days). The certificate is valid for 6 years, except in Curacao, Aruba, and other Dutch possessions, where it is valid for only 4 years.—Immunization Information for International Travel, *Public Health Reports*, December, 1954.

COUNCIL ON PHARMACY AND CHEMISTRY

REPORT TO THE COUNCIL

The Council has authorized publication of the following report.

R. T. STORMONT, M.D., *Secretary.*

SPERMICIDAL ACTIVITY OF UNDILUTED COMMERCIAL CONTRACEPTIVE PREPARATIONS, 1953

Clarence J. Gamble, M.D., Milton, Mass.

Estimation of the effectiveness of contraceptive procedures is difficult, because statements of the patients are the only evidence on which to base conclusions as to whether the materials prescribed have been correctly used and are efficacious. For this reason the comparison of contraceptive materials in clinical series is difficult and uncertain, but laboratory tests designed to measure the spermicidal effectiveness of contraceptive jellies and creams after dilution and mixing have been devised.[1] The results are believed to be related to contraceptive efficiency. Recently a test has been described in which a column of semen in a glass tube is placed in contact with a contraceptive jelly or cream and the time for complete immobilization of the sperm is observed.[2]

The duration of motility is related to the diameter and length of the semen column. The values chosen for these are arbitrary, but, as they are the same for each material, comparisons of activity are justified. It is believed that the improved technique of assay now used [2] reflects conditions in the postcoital vagina more closely than did the technique used in the earlier tests, which involved dilution and complete mixing. In the previous paper [2] the times required for the immobilization of the sperms in a column of semen 2 mm. in diameter and 5 mm. long were given for commercial contraceptive materials secured in 1951. To bring this information up to date, and to include some materials of foreign manufacture not previously assayed, samples of contraceptive jellies, creams, and suppositories obtained from August, 1953, to January, 1954, were tested by the same procedure.

MATERIALS

Samples of contraceptive jellies, creams, and suppositories were secured from the manufacturer, a retail store, or a contraceptive clinic. Semen was obtained from seven donors, 22 to 26 years of age, and was used within three hours of ejaculation.

PROCEDURE

The procedure was as previously described.[2] The jelly column was 6 mm. or more in length. The semen column was 2 mm. in diameter and 4.8 to 5.2 mm. long from the tip of the jelly to the nearest portion of the meniscus of the column of semen. The length of the semen was adjusted on a mechanical stage under 40× magnification by additions or subtractions with a 0.25 cc. glass syringe and a stainless steel needle. Observation of motility was made with a 10× objective and 10× eyepiece, with indirect illumination from a 60 candle-power tungsten filament. The time measured was from first contact with the jelly to the immobilization of the last discoverable sperm that was closer to the jelly than the meniscus of the semen column. Body temperature was approximated by keeping the tubes in an incubator at 37 C when not under observation.

From 15 to 30 different materials were tested during each experiment. To make comparative tests of materials of nearly equal spermicidal power with semen of about the same age, tests were begun in the order of spermicidal activity as shown by the previous experiments. Each material was tested with the semen of seven different donors. The average number of tests of each material was 10.

RESULTS

The results are given in the table.[3] If motion continued after seven hours, the distance between the farthest motile sperm and the meniscus was recorded. If any test of a given material included such a result, the median value of all observations is given in the table. For others the mean time of all tests is recorded.

*Diffusion Spermicidal Times**

Material [3]	1953 Samples, Min.	Length of Semen Column in Which Motility Continued, Mm.	1951 Samples, Min.	Length of Semen Column in Which Motility Continued, Mm.
Rice, 30% sodium chloride [2]	41	..	27	..
Suppository 1	45	..	..	..
Suppository 2	47	..	..	..
Jelly 3	53	..	..	..
Rice, 20% sodium chloride [2]	54	..	58	..
Jelly 4	54	..	..	..
Jelly 5	56	..	..	..
Jelly 6	62	..	128	..
Jelly 7	66	..	..	..
Suppository 8	71	..	..	..
Jelly 9	79	..	..	..
Suppository 10	84	..	..	..
Jelly 11	84	..	71	..
Cream 12	88	..	..	..
Jelly 13	90	..	..	..
Cream 14	97	..	..	..
Jelly 15	98	..	..	..
Jelly 16	111	..	..	..
Jelly 17	113	..	..	..
Rice, 10% sodium chloride [2]	121	..	101	..
Jelly 18	131	..	..	..
Jelly 19	135	..	..	..
Suppository 20	140	..	..	..
Jelly 21	143	..	..	..
Jelly 22	146	..	..	..
Jelly 23	148	..	..	..
Jelly 24	151	..	..	..
Suppository 25	155	..	..	..
Jelly 26	159	..	..	..
Jelly 27	160	..	147	..
Jelly 28	167	..	175	..
Jelly 29	179	..	..	..
Jelly 30	192	..	..	..
Jelly 31	193	..	..	..
Jelly 32	195	..	..	..
Jelly 33	200	..	199	..
Jelly 34	201	..	..	..
Jelly 35	205	..	..	..
Cream 36	205	..	..	..
Jelly 37	206	..	..	..
Jelly 38	210	..	..	..
Suppository 39	212	..	..	..
Jelly 40	216	..	..	..
Suppository 41	218	..	..	..
Jelly 42	220	..	..	..
Jelly 43	224	..	254	..
Jelly 44	226	..	280	..
Cream 45	227	..	290	..
Suppository 46	228	..	..	..
Jelly 47	231	..	..	..
Jelly 48	232	..	..	..
Cream 49	236	..	284	..
Jelly 50	241	..	..	..
Cream 51	243	..	292	..

From the Department of Anatomy of Harvard Medical School, Boston.

1. (*a*) Baker, J. R.; Ranson, R. M., and Tynen, J.: The Spermicidal Powers of Chemical Contraceptives: Approved Tests, J. Hyg. **37**: 474 (July) 1937. (*b*) Voge, C. I. B.: The Chemistry and Physics of Contraceptives, London, England, Butterworth and Co., Ltd., 1933, pp. 80, 100, 185. (*c*) Gamble, C. J., and Hamblin, L.: The Spermicidal Times of Contraceptive Jellies and Creams, 1949, report to the Council on Pharmacy and Chemistry, J. A. M. A. **148**: 50 (Jan. 5) 1952.

2. Gamble, C. J.: An Improved Test of Spermicidal Activity Without Dilution or Mixing, report to the Council on Pharmacy and Chemistry, J. A. M. A. **152**: 1037 (July 11) 1953.

3. The test used measures only one of the qualities of contraceptive mixtures required for clinical protection. It does not measure consistency, adhesiveness, or other attributes on which clinical effectiveness depends in part. Consequently, since the ranking may not reflect entirely the clinical effectiveness of the materials, the Council has decided to omit the brand names and formulas. These data may be secured from the author on request.

Diffusion Spermicidal Times—Continued*

Material [8]	1953 Samples, Min.	Length of Semen Column in Which Motility Continued, Mm.	1951 Samples, Min.	Length of Semen Column in Which Motility Continued, Mm.
Jelly 52	244	..	252	..
Cream 53	255	..	..	..
Jelly 54	257	..	..	..
Cream 55	258	..	..	..
Jelly 56	260	..	..	..
Jelly 57	264	..	..	..
Suppository 58	264	..	..	..
Cream 59	265	..	305	..
Jelly 60	266	..	..	..
Cream 61	270	..	263	..
Suppository 62	273	..	..	..
Suppository 63	275	..	280	..
Jelly 64	276	..	..	..
Cream 65	283	..	263	..
Cream 66	301	..	..	..
Cream 67	305	..	..	..
Jelly 68	314	..	..	..
Suppository 69	330	..	..	..
Jelly 70	332	..	312	..
Jelly 71	338	..	283	..
Cream 72	362	..	..	..
Jelly 73	376	..	..	..
Jelly 74	388	..	420+	3.1
Jelly 75	389	..	210	..
Cream 76	392	..	372	..
Cream 77	395	..	..	..
Jelly 78	397	..	..	..
Jelly 79	400	..	420+	2.6
Suppository 80	401	..	..	..
Cream 81	415	..	..	..
Cream 82	420+	2.7	357	..
Suppository 83	420+	4.1	..	..
Cream 84	420+	4.6	420+	5.0
Cream 85	420+	4.9	..	..
Suppository 86	420+	5.0	..	..
Suppository 87	420+	5.0	..	..

* The number of minutes during which motion of sperms continued in a column of human semen 2 mm. in diameter and 5 mm. long in contact with a contraceptive material. Times found with 1951 samples are given for all those known to have been made from the same formula in 1951 and 1953.

For the 62 materials with all times under seven hours, the standard deviation of a single measurement of immobilization time was found to be 33% of the mean. This indicates that two values given in the table are to be considered significantly different (less than one chance in 20 of the difference being due to chance) if they differ by more than 29% of their common mean. This is a maximum value, since the standard deviation was computed from observations with different ejaculates of different ages, whereas most of the comparisons of materials near each other in the table were made with the same ejaculate at about the same age.

For each material of which a 1951 sample was tested [2] and of which the complete formula was given as the same in 1953, the time found for the earlier sample is given in the third column. The differences of the 23 materials are, on the average, 13% of the mean of each pair.

It is of interest to compare the activities found for the three groups: jellies, suppositories, and creams. The median rank in the table for the 51 jellies is 33rd. This indicates that the average spermicidal activity of the jellies tested is higher than that of the 16 suppositories, for which the median rank is 52nd, and still greater when compared with that of the 20 creams, for which the median rank is 63rd.

FORMULAS

Each manufacturer was asked for the formula from which the material was made.[3] For 38% of the 87 materials tested, a portion of the formula was secret.

In prescribing contraceptive jellies or creams, a physician should remember that the formula from which a given brand name is prepared may not be constant. A mixture that he recommends under its brand name may be quite different today from that which he had found successful in his earlier patients. This is well illustrated by the materials studied in both the 1951 and 1953 series. Of the 43 formulas that were completely available in 1951, 15 (35%) had been changed before 1953.

SODIUM CHLORIDE AS A SPERMICIDE

In the previous article,[2] the low immobilization times of jellies prepared from rice flour and sodium chloride were recorded. Values of the same magnitude were obtained when tragacanth was used instead of the rice flour as the jelly-forming material.

In the present series the immobilization times were measured of rice flour jellies containing sodium chloride in concentrations of 10, 20, and 30% of the water present. As indicated in the table, the average times approximate those of the same preparations in the previous series, indicating that for this substance the average resistance of the sperms used was about equal in the two years. In each series the 30% sodium chloride jelly showed the shortest immobilization time of any of the preparations, whereas the time of the 10% mixture was shorter than that of 90% of the commercial preparations tested in 1951 and of 80% of those in 1953.

The spermicidal activity of sodium chloride is also indicated by comparisons of immobilization times of some of the preparations in the two years. The time for cream 12 decreased from 411 to 88 minutes and that for jelly 3 from 100 to 53, with the addition of 6 and 10% sodium chloride respectively. The time for jelly 7, with the addition of 6% sodium chloride and other changes, fell from 77 to 66 minutes.

Series of clinical contraceptive studies have been begun with the use of 10% sodium chloride in a rice jelly inserted with a syringe; in other series a 10% solution carried in by a rubber sponge, a cotton wad, or a cotton pad has been used. These have shown an encouraging decrease in pregnancy rate, but the numbers and durations of cases are not adequate as yet for an accurate determination of the effectiveness.

COMMENT

The question has been asked, "What immobilization time, under the conditions of the test, should be considered the maximum for a desirable contraceptive mixture?" Because the test is a comparative one and cannot yet be translated into a clinical pregnancy rate, a satisfactory answer is difficult. Though the same difficulty is encountered with the test of Brown and Gamble,[4] the Council on Pharmacy and Chemistry decided that, for acceptance for inclusion in New and Nonofficial Remedies, a contraceptive material should, by that test, show a spermicidal time of 30 minutes or less.[5] When this value is compared with an application of the test to 97 commercial contraceptives [6] made shortly before the value of 30 minutes was chosen, it was found to include the 37% of those that showed the greatest activity. The reasoning of the Council may have been that commendable materials should attain an activity as great as that found in the most active three-eighths of those on the market.

A similar reasoning, based on the 87 commercial contraceptive materials here reviewed, would indicate a maximum diffusion spermicidal time of 195 minutes for desirable materials, since that includes only the most active 37%.

The reader should be reminded that no correlation of these immobilization times with pregnancy rates of users of the materials has yet been possible. As the conditions of the test approach those in the postcoital vagina, however, the probability of a positive correlation makes the test seem of value.

255 Adams St.

4. Brown, R. L., and Gamble, C. J.: A Method of Testing the Relative Spermicidal Effectiveness of Contraceptives, and Its Application to Ten Commercial Products, Human Fertil. 5: 97 (Aug.) 1940. Gamble.[1c]

5. New and Nonofficial Remedies, Philadelphia, J. B. Lippincott Company, 1954, p. xxxv.

6. Brown, R. L., and Gamble, C. J.: Studies of Spermicidal Times of Contraceptive Materials, Human Fertil. 8: 9 (March) 1943.

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A. M. A. COUNCILS EXPAND THEIR PROGRAMS

For many years the evaluating councils of the American Medical Association have provided leadership in the evaluation of products used by physicians and to some extent by the public. The Council on Pharmacy and Chemistry since 1905 has evaluated drugs and reported to the medical profession on these and related therapeutic procedures. The Council on Physical Medicine and Rehabilitation, formerly the Council on Physical Therapy, has been developing information on therapeutic and diagnostic devices since 1925. The Council on Foods and Nutrition since 1929 has evaluated nutritional claims and food products. The newer Committee on Cosmetics has been in existence since 1948.

The A. M. A.'s product evaluating councils have awarded seals to manufacturers and distributors of drugs, foods, devices, and cosmetics that have complied with the rules for such acceptance. Over the years the councils have become well known for this phase of their activities, in fact, probably better known for this work than for their other never-ceasing efforts in the broader educational aspects of collecting, digesting, and disseminating medical information. Their work has been diversified, but the seal or acceptance program has appeared to dominate because of the dramatic effect of and the prominence given to such a program. Also, it has been so time-consuming that there has been too little time left for attention to other important work. In addition to the seals of the councils, there has been made available an advertising emblem for products that have not fallen within the scope of a council. Thus, the public has become familiar with the statements "Accepted for advertising in the publications of the American Medical Association" and "Accepted for advertising in *Today's Health*." Often these statements have been displayed in the form of an emblem. This too has been part of the "acceptance" program of the American Medical Association.

For months the councils of the American Medical Association and the Board of Trustees have been studying ways and means by which the Association can increase its service to the public and the medical profession. While many avenues for pursuit were explored, there were always the limiting factors of time, personnel, and money to be considered. One of the programs seemingly in greatest demand by the profession is one that calls for more information on the more recent advances in health problems. Various devices introduced in recent years have posed questions for true usefulness; new drugs have raised problems concerning their proper use and possible toxicity; cosmetic-type preparations have become complicated by the introduction of synthetically prepared ingredients; and nutrition, although long studied, has many phases in need of study and report. To meet the demand caused by the tremendously and broadly expanding horizon in diagnostic, curative, and preventive medicine is a problem of no small dimensions. Therefore, the Board of Trustees and the councils have decided to spend more time on this important phase of their work and to increase this work to match the need. The so-called acceptance program has been useful and helpful, but the need for it has become much less as laws have been enacted and as manufacturers have assumed more and more their share of responsibility in marketing worth-while products.

As of now, the issuance of seals or emblems by any part of the American Medical Association is discontinued. Obviously the seals may be seen for some time, as advertising material already printed is used. But it is only a matter of time before an "A. M. A. seal" is a thing of the past.

What will the programs of the councils provide to be of more service to the public and the profession? It is impossible to describe in a few words all of the ways in which the councils will conduct their expanded programs. Briefly, however, they can be summed up by stating that these bodies will issue reports promptly and frequently on what is new in diagnostic, curative, and preventive medicine in the respective fields of the councils; they will periodically review the status of agents and techniques; they will develop basic standards for classes of goods as, for example, the Council on Physical Medicine and Rehabilitation long has done for resuscitators and inhalators; and they will undertake educational efforts to insure as much as possible the utilization of the information they gather, digest, and evaluate. This information will be made available regularly in THE JOURNAL. It will be gathered from various sources, including manufacturers, researchers, and published medical literature. In addition, the councils will continue to issue books or booklets in which such information can be brought together handily and usefully.

There may be some who wonder if the advertising standards for the publications of the American Medical Association will be lowered by the change in emphasis in the councils' programs. All readers of THE JOURNAL can be assured that careful scrutiny will be continued for items for the advertising pages. While the long-familiar seal will not be seen, basic principles will continue in effect. Advertisements that by either intent or inference would result in deceiving, defrauding, or misleading the reader are not suited to A. M. A. publications; nor are sweeping superlatives and unfair comparisons. Any claims for superiority of a product will have to be supported by acceptable evidence. Disparagement of competitor's goods will be discouraged. Quotations or excerpts from published papers will not be accepted if by themselves they distort the true meaning intended by the authors. These and other desirable principles will guide those who are responsible for the acceptance of advertising for the publications of the American Medical

Association, so that the best interests of the members of the Association can be served. All of the publications are published under the direction of the Board of Trustees, and its members are responsible to the House of Delegates of the Association. In due time the councils are expected to issue statements on their programs, and at the same time details on the principles of advertising for A. M. A. publications will be available.

An exciting challenge today faces all of medicine because of the swiftly moving pace of medical knowledge and the eagerness with which physicians and the public too, await it. With their long years of experience the councils of the American Medical Association are in a unique position to provide the leadership required. They are to be commended for their prompt response to the challenge. Both doctors and patients will benefit from it.

NEW DRUGS FOR PATIENTS WITH EMOTIONAL DISORDERS

Several drugs have been developed within recent years that appear to be valuable in the treatment of patients with emotional disorders. These include reserpine, other extracts of rauwolfia serpentina, and chlorpromazine (10-[γ-dimethylaminopropyl]-2-chlorophenothiazine hydrochloride), all of which are reported to have a sedative effect without clouding consciousness. Pipradrol (α-[2-piperidyl]-benzhydrol hydrochloride), another drug recently introduced, is being prescribed for its beneficial effect on feelings of depression. These drugs appear to offer advantages over drugs of long-standing usage, such as the barbital compounds, amphetamine, and methamphetamine, and to have somewhat different indications. Their use by both psychiatrists and nonpsychiatrists has been encouraged through circulars from pharmaceutical firms. Patients sometimes ask for them as a result of enthusiastic but uncritical attention these drugs have been given in the lay press. Any measure that can help patients suffering from emotional disorders is very welcome to the psychiatrist and general practitioner; however, a word of caution seems indicated. If these drugs are used indiscriminately they will fall into disrepute and their benefits will be lost.

A physician can use such a drug effectively only if he understands both the drug and the patient. A drug by itself cannot resolve a patient's emotional problems. It can provide an opportunity to strengthen his adaptive mechanisms so that he can handle his problems in a more satisfactory manner. There is need for careful assessment of the patient and prescription of drugs in accordance with their pharmacological actions as these affect the disorder of the patient. The physician must understand the psychological reaction patterns of his patient as well as the pharmacology of the drug. Whether he does, or does not, understand these aspects is what matters rather than whether he is a psychiatrist or some other type of physician or surgeon; for example, chlorpromazine appears to act on the physiological patterns accompanying aggressive drives that are directed outwardly and to reduce the intensity of these drives. This results in lessening of aggressive behavior or in reducing anxiety about aggressive impulses. Chlorpromazine does not appear to ameliorate aggressive drives that are directed inwardly against the self, as in depression without agitation. In any case, the precise physiological and psychological effects of these drugs have not been clearly established yet, nor have the complicating side-effects been fully delineated.

Another important aspect of drug therapy is that a pharmacological agent can have varying effects depending on the feelings of the patient for the physician who prescribes the drug; for example, disulfiram, which now has established usage in the treatment of alcoholism, will be taken religiously by a patient who has positive feelings for the doctor, and it will usually prevent the patient from relapsing. It will be discarded by a patient who has accumulated negative feelings not clarified by the doctor and hence will be of no value. Some other drug may be taken by a patient who is feeling negatively toward his doctor with the result that it has little or no therapeutic effect. This is particularly the case if the doctor has given the drug in lieu of listening to the patient and gratifying his need to communicate his problems.

PEDIATRIC SURGERY

In this age of specialties and subspecialties one should perhaps not mention the need for a greater interest in the problems connected with operating on infants and children. Potts in this issue (page 627) states that of 45 children's hospitals in this country only 8 have surgical services headed by men whose practice consists chiefly of pediatric surgery. This makes it all the more important that those who are called on from time to time to operate on children become acquainted with the special problems involved. In an excellent summary of this subject Chandler[1] states that infants and children withstand major operations well, provided (1) blood loss is kept to a minimum, (2) a higher oxygen content of the anesthetic mixture is maintained than is usual with adult inhalation anesthesia, (3) body chilling is avoided, and (4) the surgeon has an intimate knowledge of the physiology of the newborn and premature infant, the pathology of the child's condition, and embryological development. The surgeon who works with children should take time to get acquainted with his patients, and, with those who are old enough to understand, he should always warn them before doing anything painful or likely to cause fright. Cooperation between surgeon, pediatrician, and anesthetist is essential.

During the operation fluids and blood should be given if the procedure will last more than one hour. Bone marrow transfusion is not recommended as a routine, but when no suitable vein can be found it may be lifesaving. Tissues must be handled with the utmost gentleness; dissections should be sharp; unnecessarily complicated techniques should be avoided; and the blood supply of the tissues must be preserved. In preoperative and postoperative care the needs of these patients must be anticipated. In anyone who undertakes to operate on infants and children a genuine interest in the field is his greatest asset.

1. Chandler, L. R.: Symposium on Total Care of Surgical Patient: Preoperative and Postoperative Care in Infants and Children, S. Clin. North America 34: 1463-1471 (Oct.) 1954.

ORGANIZATION SECTION

A. M. A. COMMENDS PRESIDENT ON HEALTH MESSAGE

The Board of Trustees of the American Medical Association issued a statement commending President Eisenhower for his Jan. 31 health message to Congress and has pledged continued support to improve the health of the nation by strengthening medical efforts at the state and local levels. The Board congratulated Mr. Eisenhower on his statement that health proposals to the 84th Congress "recognize the primacy of local and state responsibility" and would "encourage private efforts with private funds."

In support of many of Mr. Eisenhower's specific proposals the A. M. A.'s statement noted that most areas touched on in his message are those in which the medical profession as a whole has been concentrating much of its activity. It applauded the administration's recognition and support of what Mr. Eisenhower called "important progress" in bettering health and reducing the threat of leading diseases.

Following is an extract of the statement released by the Board of Trustees on the recommendations of Mr. Eisenhower that are supported in principle by the Board.

"1. An 'intensified attack' on mental illness, which has been termed 'the nation's number one health problem' by the A. M. A. Council on Mental Health. The A. M. A., through this council which was established in 1952, and the American Psychiatric Association are jointly sponsoring a national survey and report on all aspects of mental health and illness. This project, cosponsored by 16 national organizations, expects to evolve some fundamental departure from traditional concepts of dealing with mental illness which will lead to a far more effective attack on the problem than has thus far been realized.

"2. Proposals aimed at relieving the shortage of nurses. The A. M. A. has for years not only worked closely with the American Nurses Association, the League for Nursing, and the Committee on Careers in Nursing on this problem, but on several occasions has urged that federal funds be made available to help support a nurse recruitment program.

"3. Continued efforts in 'restoring to useful lives most persons who become disabled and who can be rehabilitated and returned to employment.' The A. M. A. agrees that reaching the President's goal will be 'a heartwarming achievement.'

"4. Permitting 'greater flexibility in the use by states of federal grants-in-aid for public health services.' The A. M. A. has supported this theory in previous legislatures and agrees with the President's aim of unifying the grant-in-aid structure. Dr. George F. Lull, Secretary-General Manager of the A. M. A., has stated the organization considers it 'eminently desirable for local health officials to have greater responsibility and discretion for solving public health problems' and approves of 'sound proposals to meet these objectives.'

"5. Establishing traineeships in public health and strengthening the Public Health Service Commissioned Corps by improving its status and survivor benefits. The A. M. A. is in agreement with actions designed to better the Service.

"6. Stepping up research on air and water pollution. The A. M. A. has supported federal research grants for this work and also recognizes the need for intensification of study.

"The Association . . . is not prepared to comment on Mr. Eisenhower's proposals to improve arrangements for health service to public assistance recipients, until it can study the legislation recommended. The A. M. A. has long supported and worked for better care for those unable to pay for it, and considers worth while the fundamental purpose of proposals intended to better this care.

"The A. M. A. . . . has no opinion yet on Mr. Eisenhower's new recommendation for mortgage loans to provide construction of health facilities but will study the legislation introduced.

"The A. M. A. has been in complete accord with the stated purpose of legislation designed to promote voluntary health insurance and commends Mr. Eisenhower for his beliefs and efforts in encouraging its expansion. The medical profession has been reassured to find that the official position of the government is one of 'trust and confidence' in the ability of private initiative to solve existing problems in the field of medical care. However, the A. M. A. still believes that the proposed reinsurance system will not achieve the desired results."

Supplementing the statement, George F. Lull, Secretary and General Manager of the American Medical Association, said: "In practically every instance of recognized deficiency, the A. M. A. has been the first to undertake a positive, constructive program of action, and continues to be determined in its efforts and its cooperation with those working toward the same goals."

NEW CATALOG OF HEALTH BOOKLETS

The A. M. A.'s Bureau of Health Education presents its new catalog of "Publications About Your Health," listing hundreds of new pamphlets on personal and family health problems. Copies of these booklets may be secured for distribution to patients through the A. M. A.'s Order Department. Several new titles include: "For Safer Cycling," which describes a community program for teaching children safe bicycling rules; "Is He Ready for Kindergarten?" which outlines the points parents should watch for in the physical, mental, and emotional development of their preschool children; "The New Contact and Corneal Lenses," which discusses the new type of lenses and the types of persons who can safely wear them; and "Joe's Nervous Breakdown," which explains why and how breakdowns occur and what to do about them.

RADIO TRANSCRIPTIONS FOR 1955

The A. M. A. Bureau of Health Education has announced its 1955 radio transcription plans, whereby three new program series will be developed for the use of state and county medical societies over local radio stations. With the cooperation of the Rocky Mountain Radio Council, the A. M. A. will make available about April 15 a special series of 13 medical transcriptions entitled, "Dr. Tim Detective." This series tells the story of two youngsters who help the doctor solve interesting and mysterious medical cases. Another series, to be released about June 15, will be based on the A. M. A.'s week-day Chicago television program, "The Doctor Answers." Tapes will be made of 13 of these shows, in which a commentator asks pertinent health questions of Bureau staff doctors. The final series—dealing with new developments in various medical specialties—will be completed about Sept. 15. Authorities in such fields as geriatrics, mental health, cancer, polio, arthritis, and obstetrics will be featured.

SEX EDUCATION

"Parents' Privilege" is the name of the first pamphlet in the new sex education series prepared by the Joint Committee on Health Problems in Education of the National Education Association and the American Medical Association. This pamphlet is now off the press, and four more in this series are in production. These pamphlets are being distributed by both the previously named associations.

MEDICAL EDUCATION INCOME FOR 1954

Dr. Edward L. Turner, secretary-treasurer of the American Medical Education Foundation, reports that during 1954 the foundation received total income of $1,182,627.08 from 22,996 contributors. The foundation's income from July 1 through Dec. 31 amounted to $360,386.78, which is available for transfer to the National Fund for Medical Education for disbursement to the medical schools. The 1954 records showed an increase of 4,820 contributors and $92,664.15 over figures for 1953.

MEDICAL NEWS

ALABAMA

Tom Spies Honored.—At its annual meeting in Santurce last December the Puerto Rico Medical Association bestowed honorary membership on Dr. Tom D. Spies of Birmingham. The president of the association, Dr. F. Hernándes-Morales, presented Dr. Spies with a scroll attesting to "his interest in the medical problems of Puerto Rico and his valuable contributions to the advancement of medical science."

CALIFORNIA

Address by Dr. Mayo.—Dr. Charles W. Mayo, professor of surgery, University of Minnesota Graduate School, will address the Bay District Surgical Society at the annual dinner Feb. 24 in the Miramar Hotel, Santa Monica. The affair is open to all members of the medical profession and their wives. Dress is formal, and admission is $5 per plate. Dr. Mayo will discuss "The United Nations—Their Problems and Ours."

Meeting of Gynecologists.—Dr. R. Gordon Douglas, chairman, department of obstetrics and gynecology, Cornell University Medical College, New York, will discuss "Oxytocin, Newer Knowledge and Present Clinical Usage" at the Feb. 21 meeting of the San Francisco Gynecological Society, to be held at 7 p. m. in the Empire Room of the Hotel Sir Francis Drake. Interested physicians are invited. There will be a question period. Dinner following the meeting will be limited to members of the society.

Deputy Hospital Director Needed.—The position of deputy director, Hospital Medical Services, in the California State Department of Mental Hygiene will be filled by a civil service examination for which the final application date is March 4. The deputy director has charge, under the director, of treatment and related services in California's 13 large mental hospitals and eight clinics. There are about 53,000 persons under state care in California for mental illness or deficiency, some 42,000 of them in the hospitals. The position pays $14,400 to $15,600 annually.

Society News.—The Los Angeles County Medical Association announces that the Santa Monica meeting originally scheduled for Feb. 24 has been postponed to March 1, when it will be held at the Miramar Hotel in Santa Monica. This is one of four meetings scheduled by the association's 14 branch organizations in connection with the annual visit of the officers of the California Medical Association. On Feb. 22 a meeting will be held at the Rainbow Angling Club, Azusa. Visiting officers of the California Medical Association include: Dr. Arlo A. Morrison, Ventura, president; John Hunton, executive secretary; Howard Hassard, legal counsel; Rollen Watterson, health insurance consultant; Ben Read, executive secretary of the Public Health League; and Ed Clancy, public relations director.

FLORIDA

Dr. Blumgart to Lecture.—During his visit in Miami, Feb. 25-26, Dr. Herrman L. Blumgart, professor of medicine, Harvard Medical School, and physician-in-chief, Beth Israel Hospital, Boston, will conduct grand rounds at the Jackson Memorial Hospital, Miami, Friday at 9 a. m., and Saturday at 9 a. m. he will discuss angina pectoris. He will lecture on heart block to the first year students of the University of Miami School of Medicine, Coral Gables, Friday at 3:30 p. m. Under the sponsorship of the Heart Association of Greater Miami, Dr. Blumgart will speak at 8:15 p. m. Thursday in Memorial Hall, Jackson Memorial Hospital. His subject will be "The Heart and the Thyroid."

Physicians are invited to send to this department items of news of general interest, for example, those relating to society activities, new hospitals, education, and public health. Programs should be received at least three weeks before the date of meeting.

ILLINOIS

Meeting on Anesthesiology.—Dr. Harold R. Griffith, chairman, department of anesthesia, McGill University Faculty of Medicine, Montreal, Canada, will be the guest speaker of the Illinois Society of Anesthesiologists at a meeting at Children's Memorial Hospital, Nurses' Home Auditorium, 710 W. Fullerton Ave., Chicago, at 8 p. m. Feb. 21. His subject will be "The Anesthesiologist as a Physician."

Chicago

Meeting on Arthritis.—A joint meeting of the Chicago Rheumatism Society and the Chicago Society of Physical Medicine and Rehabilitation will be held at the Stritch School of Medicine of Loyola University, 706 S. Wolcott St., Feb. 23, at 8 p. m. "Medical Management and Physical Treatment of Rheumatoid Arthritis" will be discussed by Dr. Howard F. Polley, Rochester, Minn. Physicians, technicians, other professional personnel, and their guests are welcome.

International Surgeons Dedicate Statue.—On Feb. 10 a statue was dedicated by the International College of Surgeons "symbolizing the ideals of the International Surgeons' Hall of Fame and Museum of Surgical Science" at 1524 Lake Shore Drive.

Statue dedicated by International College of Surgeons.

The statute, sculptured by Edouard Chassaing, represents the surgeon rendering aid to a stricken patient, and is inscribed "Hope and Help." The program for the dedication included the names of Dr. George F. Lull, General Manager and Secretary of the American Medical Association; Col. Hugh R. Gilmore Jr., curator, Medical Museum, Armed Forces Institute of Pathology, Washington, D. C.; Ilza Veith, Ph.D., president, Society of Medical History of Chicago; Dr. Morris Fishbein, chairman of dedication activities; Dr. Henry W. Meyerding, Rochester, Minn., first vice-president, International College of Surgeons; Dr. Arnold S. Jackson, Madison, Wis., president, United States section, International College of Surgeons; Dr. Max Thorek, founder of the International College

of Surgeons; Dr. Karl A. Meyer, medical superintendent of Cook County Institutions; Dr. Lowell T. Coggeshall; Dr. Ernest B. Irons; Dr. Theodore R. Van Dellen; Lieut. Gov. John William Chapman; and Mr. James R. Gersonde, representing the Chicago Hospital Council; and also includes the consular corps.

IOWA

Lecture on Pneumonia.—A lecture, "Acute Bacterial Pneumonia," will be presented in the Amphitheater, Veterans Administration Center, Des Moines, Feb. 21, 7:30 p. m., by Dr. William Barry Wood, head, department of medicine, Washington University School of Medicine, St. Louis. Dinner ($1.75) will be at 6:30 p. m. Reservations should be sent in advance to Dr. Ivan H. Sheeler, chief medical officer, Veterans Administration Center, 30th and Euclid streets, Des Moines 9.

MICHIGAN

Anniversary of Water Fluoridation.—The city of Grand Rapids is celebrating its 10th anniversary of continuous fluoridation. Since 1945 when Grand Rapids is said to have become the first city in the world to fluoridate its water supply, more than 22 million people of 1,030 communities in the United States have become consumers of fluoridated water.

Personal.—Dr. Eugene H. Payne, a member of the clinical investigation department of Parke, Davis & Company, Detroit, has been promoted to assistant director for overseas. Dr. Payne has been associated with the firm since 1941.——Dr. Duane L. Block, medical director of the General Motors Corporation technical center, has been appointed physician in charge of medical services at Ford Motor Company's Rouge plant in Dearborn, succeeding Dr. Harley L. Krieger, who has been named special assistant to the medical director.

MINNESOTA

Outbreak of Diphtheria.—According to the U. S. Public Health Service, an outbreak of diphtheria was recently reported that involved 11 known cases in five widely separated families in the northern part of the state. One case in a 39-year-old man and one in a 6-year-old boy were fatal. The course and mode of spread had not yet been determined.

MISSISSIPPI

Headquarters Building Site Purchased.—Acting on a Mississippi State Medical Association petition, the Jackson city government recently rezoned for office building construction a one acre plot near the new medical center at Jackson. The land (Riverside Drive, off North State Street) was then purchased by the association as a site for its projected permanent building.

MISSOURI

Award to Dr. McMahon.—At its annual Awards Dinner Dance Feb. 27 at the Jefferson Hotel, the Alumni Association of the St. Louis College of Pharmacy and Allied Sciences will bestow the annual award for distinguished service to medicine and pharmacy on Dr. Alphonse McMahon, past president of the Southern Medical Association and a member of the faculty of St. Louis University School of Medicine.

Dr. Cowdry Honored.—Edmund V. Cowdry, Ph.D., research professor emeritus, Washington University, St. Louis, was honored for his almost 40 years of scientific activity in anatomy, cytology, cancer research, and gerontology at a dinner given by the Detroit Institute of Cancer Research, Wayne University, Oct. 26, 1954. Many former students, co-workers, and friends attended. Dr. Cowdry recently accepted the chairmanship of the National Scientific Council of the City of Hope Medical Center, Duarte, Calif.

NEW JERSEY

Society News.—The New Jersey Neuropsychiatric Association recently elected Dr. J. Lawrence Evans, Englewood, as president; Dr. Evelyn P. Ivey, Morristown, president-elect; Dr. Ira S. Ross, Newark, secretary; and Dr. David W. McCreight, Marlboro, treasurer.

Heparin Symposium and Film.—A special heparin symposium was held Dec. 16, 1954, by the Academy of Medicine of New Jersey at Newark, with Dr. Irving S. Wright, professor of clinical medicine, Cornell University Medical College, New York, as moderator. Guest speakers were Drs. James Barron, Detroit; John W. Gofman, associate professor of medical physics at the University of California, Berkeley; Jere W. Lord Jr., associate professor of clinical surgery at Post-Graduate Medical School of the New York University–Bellevue Medical Center; and William T. Foley, chief of the vascular clinic at New York Hospital. A film giving the views of the speakers is being prepared for showing to medical groups throughout the country. Physicians interested in arranging to view the film should write to the Academy of Medicine of New Jersey, 91 Lincoln Park South, Newark.

NEW YORK

Dr. Snapper to Discuss Bone Diseases.—The Kings County Radiological Society at its meeting Feb. 24, 9 p. m. (Kings County Medical Society Building, 1313 Bedford Ave., Brooklyn) will have as speaker Dr. Isidore Snapper, director of medical education, Beth-El Hospital, Brooklyn, whose topic will be "Medical Bone Diseases." Physicians are invited.

Training in Anesthesiology.—The New York State Society of Anesthesiologists, in cooperation with the American Society of Anesthesiologists, is offering postgraduate training in anesthesiology to physicians engaged in full or part-time practice of the specialty. Instruction, varied to suit individual needs, will be given near the applicant's own community. There is no tuition fee. Information may be had from Dr. Edwin Emma, New York State Society of Anesthesiologists, 137 W. 11th St., New York 11.

Personal.—Robert C. Hockett, Ph.D., Larchmont, has been appointed associate scientific director of the Tobacco Industry Research Committee to assist Dr. Clarence Cook Little, scientific director, and the scientific advisory board in developing the tobacco industry's program of research into tobacco use and health. The committee recently made initial grants totaling $82,000 to six institutions for basic research projects and is reviewing applications for additional grants.——Dr. Ferdinand S. Hoffmeister, Buffalo, a 1939 graduate of the School of Medicine of Charles University, Prague, Czechoslovakia, has been named associate chief of the department of reconstructive surgery at the newly expanded Roswell Park Memorial Institute, Buffalo. Dr. Hoffmeister worked at the Queen Victoria Hospital, East Grinstead, England, before coming to the United States seven years ago on a World Health Organization fellowship. Until recently he was resident in surgery, instructor in plastic surgery, and National Cancer Institute fellow at Johns Hopkins Hospital, Baltimore.——Commander James L. McCartney (MC), U. S. N. R., retired, Garden City, is on a world cruise during which he had been invited to speak, under the auspices of the World Medical Association, to the medical societies at Havana, Cuba; Yokohama and Kobe, Japan; Manila, Philippine Islands; Colombo, Ceylon; Cochin and Bombay, India; Karachi, Pakistan; and Naples and Genoa, Italy, on "Treatment of the Involuntional and Senile Psychoses." Dr. McCartney will survey the psychiatric facilities in each of the 14 countries he will visit and will return to New York on March 6.——Dr. Ernest M. Gruenberg, Albany, executive director, New York State Mental Health Commission, has resigned to accept a position with the Milbank Memorial Fund, where he will be a senior member of the technical staff in charge of the fund's mental health activities. Formerly, Dr. Gruenberg was assistant in the department of psychiatry and mental hygiene and the department of public health, Yale University School of Medicine, New Haven, Conn., where he served also as a consultant in mental health for the Milbank Memorial Fund.

New York City

Fracture Day.—The 20th annual "Fracture Day" of the New York and Brooklyn regional committee on trauma of the American College of Surgeons will be observed Feb. 26 at Lenox Hill Hospital (Einhorn Auditorium, 111 E. 76th St.). The morning

session will include a symposium on disability evaluation and the afternoon session a symposium on the management of chest trauma. The Donald Gordon Memorial Lecture will be delivered by Dr. Robert Hayward Kennedy at lunch, 1 p. m.

Society News.—The Bronx Pediatric Society recently elected the following officers: Dr. Benjamin Arbor, president; Dr. Leon Greenspan, vice-president; and Dr. Harold H. Aaron, secretary-treasurer.——The Bronx Society of Neurology and Psychiatry will meet at the Veterans Administration Hospital (130 W. Kingsbridge Rd., Bronx, Conference Room 3A) at 8:30 p. m., Feb. 24. "Clinical Manifestations with Thorazine and Serpasil—Parkinson-like and Other Syndromes" will be the topic of Dr. Paul H. Hoch, principal research psychiatrist, New York State Psychiatric Institute.

NORTH CAROLINA

Dr. Lawson Goes to Florida.—Dr. Robert B. Lawson, formerly professor of pediatrics and chairman, department of pediatrics, Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, has been appointed to the same posts at the University of Miami School of Medicine, Coral Gables, Fla.

Postgraduate Courses.—The office of continuation education of the University of North Carolina School of Medicine, Chapel Hill, announces the following corrected schedule for postgraduate medical courses in 1955:

Statesville Medical Course, Feb. 22; March 1, 15, 22, 29; April 5.
Albemarle Medical Course, Feb. 23; March 2, 16, 23, 30; April 6.
Shelby Medical Course, April 6, 20, 27; May 11, 18, 25.
Chapel Hill—Third Annual Course in General Medicine and Surgery, March 8, 9, 10.
Chapel Hill—Course in Diagnostic Methods and Aids, Feb. 16, 23; March 2, 9, 16, 23, 30; April 6.

OHIO

Dr. Pauline Rossel Honored.—Dr. Pauline Pegg Rossel, Columbus, was recently named Medical Woman of the Year by the American Medical Women's Association. Founder of a colony home for retarded young men who have become self-supporting and guiding spirit of the Council for Retarded Children, Inc., of Franklin County, Dr. Rossel has been instrumental in organizing parents to work for opportunities for children who are excluded from public schools because of their handicap. The Council for Retarded Children of Franklin County operates five classes for 60 children, employing five teachers and five helpers. The budget which they provide is $37,000.

OKLAHOMA

Award to Dr. Mathews.—At the annual meeting in Washington, D. C., the Association of State and Territorial Health Officers bestowed on Dr. Grady F. Mathews, Oklahoma City, state commissioner of health, the Arthur J. McCormick award for an outstanding contribution to public health. Dr. Mathews was named state commissioner of health in 1939.

Obstetricians View Closed Circuit Telecast.—At a special telecast, the Oklahoma City Obstetrical and Gynecological Society recently witnessed an operation, a color film, and a demonstration over color television. At the request of the Oklahoma City surgeons, WKY-TV provided closed circuit facilities for telecasting a restricted live color program from 8 a. m. until noon during the eighth annual review of the society, Jan. 15. Dr. Ralph A. Reis, professor of obstetrics and gynecology, Northwestern University Medical School, and senior attending physician in the department at Michael Reese Hospital, Chicago, led technical discussions and performed the color-telecast operation demonstrating new methods in abdominal hysterectomies.

SOUTH DAKOTA

Rehabilitation Center.—The Black Hills Rehabilitation Center, Inc., has received $7,500 toward completion of new temporary quarters from the South Dakota Society for Crippled Children. The center will serve a wide area not now covered by rehabilitation services. No child will be denied help because of inability to pay.

TEXAS

James Greenwood Lecture.—Dr. Harry Wilkins, professor of neurosurgery, University of Oklahoma School of Medicine, Oklahoma City, gave the annual James Greenwood Lecture at the University of Texas Medical Branch Jan. 17 on the subject "Anatomical and Clinical Aspects of Headache." The James Greenwood Lectureship at the University of Texas Medical Branch was established by the family of the late Dr. James Greenwood of Houston as a tribute to his leadership in the Southwest in developing the fields of neurology and neurosurgery.

VERMONT

Tuberculosis Scholarships.—The Vermont Tuberculosis and Health Association is offering two $50 scholarships to physicians who are interested in attending the postgraduate course, "The Measurement of Pulmonary Function in Health and Disease," which will be given in Boston, March 21-25, under the sponsorship of the American Trudeau Society and the auspices of Harvard Medical School and School of Public Health, Tufts College Medical School, and Boston University School of Medicine. Application for admission to the course should be made directly to Dr. Edward J. Welch, 1101 Beacon St., Brookline, Mass. Applications for the scholarship should be sent directly to the Vermont Tuberculosis and Health Association, 187 College St., Burlington.

VIRGINIA

Narcotic Violation.—Dr. Henry C. Grant, Remington, pleaded guilty in the U. S. district court at Arlington to a charge of violating the federal narcotic law and on Nov. 24, 1954, was sentenced to serve a term of one year and one day.

Conference on Crippled Children.—The fourth annual Conference on Crippled Children will be held March 2-3 at the Hotel Roanoke, Roanoke, under the sponsorship of the Virginia Council on Health and Medical Care and at the request of the Nemours Foundation of Wilmington, Del. The theme will be "The Emotionally Disturbed Child." Dr. Adelaide M. Johnson, Mayo Clinic, Rochester, Minn., and Samuel A. Kirk, Ph.D., University of Illinois, Urbana, on the first morning will discuss "Symptoms and Causative Factors" from the standpoint of a psychiatrist and an educator. A panel, "Care and Treatment of the Emotionally Disturbed Child," will occupy the afternoon session. At the evening session Dr. Kirk will speak on the retarded child in the home and at school. The second morning's session will be devoted to a panel, "Meeting the Needs of the Emotionally Disturbed Child in Virginia." Physicians are cordially invited to attend. Details and copy of a preliminary program may be had from Virginia Council on Health and Medical Care, 102 E. Franklin St., Richmond 19.

WISCONSIN

Course in Neurology and Psychiatry.—The University of Wisconsin Medical School, Madison, will hold a postgraduate course, "Neurology and Psychiatry in General Practice," March 1-3 under the direction of Dr. Hans H. Reese, professor of neuropsychiatry. The course will conclude with a symposium on psychotherapy in medical practice. The registration fee is $5 and the course fee, $15. The course is limited to 25 participants. Application for registration should be sent to Dr. Robert C. Parkin, University of Wisconsin Medical School, 418 N. Randall Ave., Madison 6.

Personal.—Dr. Robert S. Irwin, Wauwatosa, who has been a faculty member at Marquette University School of Medicine, Milwaukee, since 1930, has been appointed director of the department of urology and promoted to the rank of clinical professor. Dr. Irwin, who succeeds the late Dr. James C. Sargent as head of the urology department, is past president of the Medical Society of Milwaukee County.——Dr. Robert E. Burns, chairman, section on orthopedic surgery, University of Wisconsin Medical School, Madison, has been elected president of the International Society of Orthopedic Surgeons and Traumatologists for the year 1955-1956.

GENERAL

Directory of Medical Illustrators.—The Association of Medical Illustrators has published its 1954 Membership Directory as (1) a catalogue of members and (2) a helpful guide to the medical profession. The directory may be obtained for $1 by writing to the editor, Muriel McLatchie Miller, Medical Arts Department, Massachusetts General Hospital, 30 Fruit St., Boston 14.

Journal Changes Name.—The *Military Surgeon*, the official journal of the Association of Military Surgeons of the United States, which has borne its title since 1901, has been renamed *Military Medicine*. The January issue (number 1 of volume 116) is the first to carry the new title. Before 1901, the official publication was known as *Proceedings of the Association of Military Surgeons of the United States.*

Kenfield Memorial Scholarship.—The American Hearing Society announces March 1 as opening date for competition for the 1955 Kenfield Memorial Scholarship, an award made annually to a prospective teacher of lipreading. Application blanks may be obtained by writing to the national headquarters, 817–14th St., N. W., Washington 5, D. C. Completed applications must be returned by May 1 to Mrs. Dorothy J. Cornett, 4310 S. W. 14th St., Coral Gables 34, Fla. The winner of the award is entitled to take a teacher training course in lipreading from any school or university in the United States acceptable to the Teachers Committee. The scholarship is to be used within one year from the date of award.

Prizes in Plastic Surgery.—Two new annual cash prizes ($1,000 and $750) for winners of the scholarship contest sponsored by the Foundation of the American Society of Plastic and Reconstructive Surgery, Inc., have been announced by Dr. Jacques W. Maliniac, New York, chairman of the board of trustees. The prizes, which are offered to American citizens only, are in addition to the three-month scholarships with full maintenance in plastic surgery centers. Foreign award holders receive $200 for local travel expenses in addition to full maintenance in the services. Scholars are chosen from essayists in the foundation's annual contest. A distinctive feature of this program is that the arrangements between the plastic surgical services here and abroad are made on a reciprocal basis.

Symposium on Antimetabolites.—The National Vitamin Foundation will present a symposium, "The Antimetabolites—Their Modes of Action and Therapeutic Implications," March 1, at the Biltmore Hotel, Madison Avenue at 43rd Street, New York. Paul L. Day, Ph.D., University of Arkansas School of Medicine, Little Rock, will serve as chairman for the morning session, and Dr. Robert W. Heinle, Kalamazoo, Mich., in the afternoon. Topics for discussion include: antivitamin E stress factors as related to fatty peroxides; thiamine, folic acid, purine, pyrimidine, pantothenic acid, vitamin B_6, and riboflavin antagonists; vitamin K and the 4-hydroxycoumarin anticoagulants; and a naturally occurring antimetabolite of methionine in the causation of a disease.

Television Symposium.—The American Academy of General Practice and Wyeth Laboratories will present a closed-circuit television symposium, "Management of Streptococcal Infection and Its Complications," in 58 cities in the United States and Canada, Feb. 24. The panel of participants includes Drs. William B. Hildebrand, Menasha, Wis., president, American Academy of General Practice (moderator); Burtis B. Breese, assistant professor of pediatrics, University of Rochester (N. Y.); E. Keith Hammond, Paoli, Ind.; John D. Keith, Hospital for Sick Children, Toronto, Canada; Charles H. Rammelkamp Jr., director, Streptococcal Disease Laboratory, Cheyenne, Wyo.; Lowell A. Rantz, associate professor of medicine, Stanford University School of Medicine, San Francisco; and Gene H. Stollerman, medical director, Irvington House, Irvington, N. Y.

Award for Contribution to Psychiatry.—The estate of Lester N. Hofheimer in May, 1947, contributed $25,000 to the American Psychiatric Association to provide an annual award for outstanding research in the field of psychiatry or mental hygiene. Eight copies of the work to be considered for the annual $1,500 prize should be submitted to Dr. Harold G. Wolff, chairman of the Hofheimer prize board, at the New York Hospital, 525 E. 68th St., New York 21, before March 1. An applicant must be a citizen of the United States or Canada, not over 40 years old at the time of his publication or submission for publication. The award applies only to work published within three years before the date of the award. The award may be divided among a group, provided that the majority of the group are citizens of the United States and Canada and that the median age of the group did not exceed 40 years at the time of publication.

Fellowship in Dermal Pathology.—The Earl D. Osborne Fellowship, sponsored by the American Academy of Dermatology and Syphilology, will provide annually the opportunity for training in dermal pathology to a postgraduate student who has completed at least one year of training in dermatology. The stipend is $4,000 a year, divided into four quarterly payments during the year's fellowship. The period of training will be spent at the Armed Forces Institute of Pathology, Washington, D. C., the appointment being subject to approval by the director of the institute. The student must complete one year of graduate training, either before or after completion of the Osborne fellowship, in an institution approved by the board for three years of training. Application blanks may be obtained from Dr. Hamilton Montgomery, Chairman, Committee on Pathology, American Academy of Dermatology and Syphilology, 200 First St. Southwest, Rochester, Minn. The next available appointment begins July 1.

Meeting on Clinical Hypoxia.—The Society for the Prevention of Asphyxial Death will hold a meeting March 24, 8 p. m., at the New York Academy of Sciences (2 E. 63rd St., New York 21) to celebrate the completion of 100 courses in clinical hypoxia. Classes have been held monthly in New York since April, 1947, and in Boston; Columbus, Ohio; Chicago; Denver; San Francisco; Los Angeles; Honolulu; Miami, Fla.; Washington, D. C.; and Baltimore and Hagerstown, Md. An award consisting of "assembled case records of rescues" will be made to Dr. Paluel J. Flagg, who organized the courses and has directed them since their inception. The 900 students who have attended the courses are invited. Those who are unable to attend are asked to participate by mailing their case records of rescues, however brief these may be (diagnosis of the degree of asphyxia met, indications for treatment, and the technique employed will suffice). Admission to the meeting will be by card, indicating class number and date, which will be mailed as soon as requested by addressing Secretary, S. P. A. D., Inc., 2 E. 63rd St., New York 21, stating "Admission card requested."

Lasker Awards.—At the annual meeting of the American Public Health Association in Buffalo, Albert Lasker awards for 1954 were presented. 1. An award was presented to Dr. Leona Baumgartner. Recently named as commissioner of health of the city of New York, Dr. Baumgartner has approached this distinction through successive steps as district health officer, as bureau chief of maternal and child health, and as assistant commissioner in New York City. She has also served for two years as associate chief of the U. S. Children's Bureau. 2. Dr. Edwin B. Astwood, research professor of medicine, Tufts College Medical School, Boston, received an award for his research in the production of goiter in animals. 3. John F. Enders, Ph.D., associate professor of bacteriology and immunology, Harvard Medical School, Boston, received an award. 4. A joint award in medical research was made to Drs. Alfred Blalock and Helen B. Taussig, professors of surgery and of pediatrics, respectively, Johns Hopkins University School of Medicine, Baltimore, and Dr. Robert E. Gross, professor of child surgery, Harvard Medical School, Boston, for their contributions to the knowledge of congenital malformations of the heart and great vessels. 5. A group award was bestowed on the Streptococcal Disease Laboratory at Francis E. Warren Air Force Base, Cheyenne, Wyo., established in 1949 under the joint auspices of the commissions of streptococcic diseases and acute respiratory diseases of the Armed Forces Epidemiological Board. The laboratory's contributions to knowledge of streptococcic diseases are said to be in the forefront of advances in preventive medicine in this generation. Each recipient of the awards received a statuette of the Winged Victory of Samothrace and a leather-bound, illuminated citation. Individual winners received checks for $1,000.

FOREIGN

International Federation of Gynecology and Obstetrics.—During the International Congress on Gynecology and Obstetrics in Geneva, July 26-31, 1954, the International Federation of Gynecology and Obstetrics was founded. Among its objectives are furthering the attainment of a higher level of physical and mental health of women, mothers, and their children; developing and improving the exchange of information and ideas in the field of gynecology and obstetrics; contributing to the research of fresh knowledge in this field; and organizing international congresses including all countries or certain groups of countries. Circumstances permitting, international congresses will be held successively on the different continents. Members of national societies may attend all congresses. The constitution has been adopted by 42 countries. Dr. Fred L. Adair, Maitland, Fla., is treasurer of the federation, and Dr. Howard C. Taylor Jr., New York, is a member of its executive board.

CORRECTION

Washington State Medical Officers.—In the announcement of newly elected officers of the Washington State Medical Association (THE JOURNAL, Jan. 22, 1955, p. 353), the address of Dr. Irvia C. Munger Jr. was incorrectly given as Vancouver, B. C., Canada. Dr. Munger's address is Vancouver, Wash.

MEETINGS

AMERICAN MEDICAL ASSOCIATION: Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

1955 Annual Meeting, Atlantic City, N. J., June 6-10.

1955 Clinical Meeting, Boston, Nov. 29-Dec. 2.

1956 Annual Meeting, Chicago, June 11-15.

1956 Clinical Meeting, Seattle, Nov. 27-30.

1957 Annual Meeting, New York, June 3-7.

NATIONAL CONFERENCE ON RURAL HEALTH, Schroeder Hotel, Milwaukee, Wis., Feb. 24-26. Mrs. Arline Hibbard, 535 N. Dearborn St., Chicago 10, Secretary.

AERO MEDICAL ASSOCIATION, Hotel Statler, Washington, D. C., March 20-23. Dr. Thomas H. Sutherland, P. O. Box 26, Marion, Ohio, Secretary.

AIRLINE MEDICAL EXAMINERS ASSOCIATION, Hotel Statler, Washington, D. C., Mar. 19-20. Dr. Seymour Fiske, 150 East 71st St., New York 21, Secretary.

AMERICAN ACADEMY OF GENERAL PRACTICE, Los Angeles, March 28-31. Mr. Mac F. Cahal, 406 West 34th St., Kansas City, Mo., Executive Secretary.

AMERICAN ACADEMY OF PEDIATRICS, Spring Session, Sheraton-Cadillac Hotel, Detroit, April 4-7. Dr. E. H. Christopherson, 610 Church St., Evanston, Ill., Executive Secretary.

AMERICAN ASSOCIATION OF ANATOMISTS, Philadelphia, April 6-8. Dr. N. L. Hoerr, 2109 Adelbert Rd., Cleveland 6, Secretary.

AMERICAN ASSOCIATION OF IMMUNOLOGISTS, San Francisco, April 10-16. Dr. F. S. Cheever, University of Pittsburgh School of Public Health, Pittsburgh 13, Secretary.

AMERICAN ASSOCIATION OF PATHOLOGISTS AND BACTERIOLOGISTS, The Shamrock, Houston, Texas, April 7-9. Dr. Edward A. Gall, Cincinnati General Hospital, Cincinnati 29, Secretary.

AMERICAN ASSOCIATION OF RAILWAY SURGEONS, Drake Hotel, Chicago, April 12-14. Dr. Chester C. Guy, 5800 Stony Island Ave., Chicago 37, Secretary.

AMERICAN BRONCHO-ESOPHAGOLOGICAL ASSOCIATION, Hollywood Beach Hotel, Hollywood, Fla., Mar. 15-16. Dr. F. Johnson Putney, 1719 Rittenhouse Square, Philadelphia 3, Secretary.

AMERICAN LARYNGOLOGICAL ASSOCIATION, Hollywood Beach Hotel, Hollywood, Fla., Mar. 13-14. Dr. Harry P. Schenck, 326 South 19th St., Philadelphia 3, Secretary.

AMERICAN LARYNGOLOGICAL, RHINOLOGICAL AND OTOLOGICAL SOCIETY, Hollywood Beach Hotel, Hollywood, Fla., Mar. 15-17. Dr. C. Stewart Nash, 277 Alexander St., Rochester 7, N. Y., Secretary.

AMERICAN ORTHOPSYCHIATRIC ASSOCIATION, Hotel Sherman, Chicago, Feb. 28-Mar. 2. Dr. Jessie E. Crampton, 1790 Broadway, New York 19, Secretary.

AMERICAN OTOLOGICAL SOCIETY, Hollywood Beach Hotel, Hollywood, Fla., Mar. 17-18. Dr. John R. Lindsay, 950 East 59th St., Chicago 37, Secretary.

AMERICAN PHYSIOLOGICAL SOCIETY, San Francisco, April 11-16. Dr. W. F. Hamilton, Medical College of Georgia, Augusta, Ga., Secretary.

AMERICAN SOCIETY FOR EXPERIMENTAL PATHOLOGY, San Francisco, April 10-16. Dr. Cyrus C. Erickson, 874 Union Avenue, Memphis 3, Tenn., Secretary.

AMERICAN SOCIETY FOR PHARMACOLOGY AND EXPERIMENTAL THERAPEUTICS, San Francisco, April 10-16. Dr. Carl C. Pfeiffer, 1853 West Polk St., Chicago 12, Secretary.

ATLANTA GRADUATE MEDICAL ASSEMBLY, Atlanta Biltmore Hotel, Atlanta, Ga., Feb. 21-24. Mrs. Stewart R. Roberts, 15 Peachtree Place, N.W., Atlanta, Ga., Executive Secretary.

CHICAGO MEDICAL SOCIETY ANNUAL CLINICAL CONFERENCE, Palmer House, Chicago, Mar. 1-4. Dr. Norris J. Heckel, 86 East Randolph St., Chicago 1, Secretary.

CONFERENCE ON MICROCIRCULATORY PHYSIOLOGY AND PATHOLOGY, Benjamin Franklin Hotel, Philadelphia, April 5. Dr. George P. Fulton, Boston University College of Liberal Arts, 725 Commonwealth Ave., Boston 15, Chairman.

DALLAS SOUTHERN CLINICAL SOCIETY, Dallas, March 14-17. Dr. T. Haynes Harvill, 433 Medical Arts Bldg., Dallas 1, Texas, Secretary.

FEDERATION OF AMERICAN SOCIETIES FOR EXPERIMENTAL BIOLOGY, San Francisco, April 11-15. Dr. M. O. Lee, 2101 Constitution Avenue, Washington, D. C., Secretary.

FLORIDA MEDICAL ASSOCIATION, Vinoy Park Hotel, St. Petersburg, April 3-6. Dr. Samuel M. Day, P. O. Box 1018, Jacksonville, Secretary.

INTERNATIONAL ACADEMY OF PROCTOLOGY, Plaza Hotel, New York, March 23-26. Dr. Alfred J. Cantor, 43-55 Kissena Blvd., Flushing, N. Y., Secretary.

JOHN A. ANDREW CLINICAL SOCIETY, Memorial Hospital, Tuskegee Institute, Ala., April 3-8. Dr. Eugene H. Dibble Jr., John A. Andrew Memorial Hospital, Tuskegee Institute, Alabama, Secretary.

MICHIGAN CLINICAL INSTITUTE, Sheraton-Cadillac Hotel, Detroit, Mar. 9-11. Mr. W. J. Burns, 606 Townsend St., Lansing 15, Mich., Executive Director.

MID-CENTRAL STATES ORTHOPAEDIC SOCIETY, Sheraton Hotel and St. Louis Medical Society Auditorium, St. Louis, April 15-16. Dr. H. O. Anderson, 3244 East Douglas St., Wichita, Kans., Secretary.

MISSOURI STATE MEDICAL ASSOCIATION, Kansas City, March 27-30. Dr. E. R. Bohrer, 634 N. Grand Blvd., St. Louis 3, Secretary.

NATIONAL GASTROINTESTINAL CANCER CONFERENCE, Hosack Hall, New York Academy of Medicine, New York, April 4-5. Dr. Morris K. Barrett, National Cancer Institute, Bethesda 14, Maryland, Executive Secretary.

NATIONAL SOCIETY FOR THE PREVENTION OF BLINDNESS, New York, March 16-18. Dr. Franklin M. Foote, 1790 Broadway, New York 19, Executive Director.

NEUROSURGICAL SOCIETY OF AMERICA, Del Monte Lodge, Pebble Beach, Calif., Mar. 16-19. Dr. Lester A. Mount, 700 West 168th St., New York 32, Secretary.

NEW ORLEANS GRADUATE MEDICAL ASSEMBLY, Municipal Auditorium, New Orleans, Mar. 7-10. Dr. Maurice E. St. Martin, Room 103, 1430 Tulane Ave., New Orleans 12, Secretary.

NORTH PACIFIC SOCIETY OF NEUROLOGY AND PSYCHIATRY, Empress Hotel, Victoria, B. C., March 25-26. Dr. John W. Evans, 919 Taylor St. Bldg., Room 805, Portland, Ore., Secretary.

POST GRADUATE INSTITUTE OF THE PHILADELPHIA COUNTY MEDICAL SOCIETY, Bellevue-Stratford Hotel, Philadelphia, March 29-April 1. Dr. Leandro M. Tocantino, 301 South 21st St., Philadelphia 3, Director.

REGIONAL MEETINGS, AMERICAN COLLEGE OF PHYSICIANS:

KANSAS, Wichita, March 18. Dr. Walter L. Schafer, 401 North Emporia St., Wichita 2, General Chairman.

NEBRASKA, Omaha, Feb. 26. Dr. J. D. McCarthy, 107 S. 17th St., Omaha, Governor.

VIRGINIA, Richmond, Feb. 24. Dr. Charles M. Caravati, 807 W. Franklin St., Richmond 20, Governor.

SECTIONAL MEETINGS, AMERICAN COLLEGE OF SURGEONS:

OHIO, Cleveland, Cleveland and Hollenden Hotels, Feb. 21-24. Dr. Stanley O. Hoerr, 2020 East 93d St., Cleveland, Chairman.

RHODE ISLAND, Providence, Sheraton-Biltmore Hotel, Mar. 3-5. Dr. Henri E. Gauthier, 34 Hamlet Ave., Woonsocket, Chairman.

TENNESSEE, Nashville, Dinkler-Andrew Jackson Hotel and War Memorial Bldg., April 4-6. Dr. James A. Kirtley Jr., 104 Twentieth Ave. North, Nashville, Chairman.

SOUTHEASTERN ALLERGY ASSOCIATION, Orange Court Hotel, Orlando, Fla., March 25-26. Dr. Katharine B. MacInnis, 1515 Bull St., Columbia 1, S. C., Secretary.

SOUTHEASTERN SURGICAL CONGRESS, Atlanta Biltmore Hotel, Atlanta, Ga., Feb. 21-24. Dr. Benjamin T. Beasley, 701 Hurt Bldg., Atlanta, Ga., Secretary.

TENNESSEE STATE MEDICAL ASSOCIATION, Read House, Chattanooga, April 10-13. Dr. R. H. Kampmeier, 706 Church St., Nashville 3, Secretary.

TRI-STATE MEDICAL ASSOCIATION, Hotel Chamberlain, Old Point Comfort, Va., Feb. 21-22. Dr. R. B. Davis, 122 South Greene St., Greensboro, N. C., Secretary.

FOREIGN AND INTERNATIONAL

AUSTRALASIAN MEDICAL CONGRESS, Sydney, N.S.W., Australia, Aug. 20-27. For information write: Federal Council of the B.M.A. in Australia, 135 Macquaire St., Sydney, N.S.W., Australia.

BRITISH MEDICAL ASSOCIATION, Representative Meeting, London, England, June 1-4. Dr. A. Macrae, B.M.A. House, Tavistock Square, London, W.C.1, England, Secretary.

CANADIAN AND BRITISH MEDICAL ASSOCIATIONS, Joint Meeting, Toronto, Canada, June 20-22. Dr. Arthur D. Kelly, 244 St. George St., Toronto, Canada, General Secretary.

COMMONWEALTH HEALTH AND TUBERCULOSIS CONFERENCE, Royal Festival Hall, London, England, June 21-25. Mr. J. H. Harley Williams, Tavistock House North, Tavistock Square, London, W.C.1, England, Secretary General.

CONGRESS OF INTERNATIONAL ASSOCIATION OF APPLIED PSYCHOLOGY, London, England, July 18-23. Dr. C. B. Frisby, National Institute of Industrial Psychology, 14 Welbeck St., London, W.1, England, President.

CONGRESS OF INTERNATIONAL ASSOCIATION OF PSYCHOTECHNOLOGY, London, England, July 18-23. For information write: Dr. C. B. Frisby, Director, National Institute of Industrial Psychology, 14 Welbeck St., London, W.1, England.

CONGRESS OF THE INTERNATIONAL ASSOCIATION FOR THE STUDY OF THE BRONCHI, Stockholm, Sweden, June 18-19. For information write: Dr. J. M. Lemoine, 187 boulevard St. Germain, Paris 7°, France.

CONGRESS OF INTERNATIONAL DIABETES FEDERATION, Cambridge, England, July 4-8. Mr. James G. L. Jackson, 152 Harley St., London, W.1, England, Executive Secretary General.

CONGRESS OF INTERNATIONAL SOCIETY OF SURGERY, Copenhagen, Denmark, July 23-29. Dr. L. Dejardin, 141 rue Belliard, Brussels, Belgium, General Secretary.

EUROPEAN CONGRESS ON RHEUMATISM, Scheveningen, The Hague, Netherlands, June 13-17. Dr. H. van Swaay, Pieter Bothstraat 12, The Hague, Netherlands, Secretary.

HEALTH CONGRESS OF THE ROYAL SANITARY INSTITUTE, Bournemouth, England, April 26-29. Mr. P. Arthur Wells, Royal Sanitary Institute, 90 Buckingham Palace Road, London, S.W.1, England, Secretary.

HISPANO-PORTUGUESE CONGRESS OF OBSTETRICS AND GYNECOLOGY, Seville, Spain, April 13-16. Dr. M. Recasens, Calle Munoz Olive 7, Seville, Spain, General Secretary.

INTER-AMERICAN CONGRESS OF RADIOLOGY, Shoreham Hotel, Washington, D. C., U. S. A., April 24-29. Dr. Eugene P. Pendergrass, 3400 Spruce St., Philadelphia 4, Pa., U. S. A., Secretary-General.

INTERNATIONAL ANATOMICAL CONGRESS, Paris, France, July 25-30. Prof. Gaston Cordier, 45, rue des Saints-Pères, Paris 6°, France, Secretary-General.

INTERNATIONAL CONGRESS OF ALLERGOLOGY, Rio de Janeiro, Brazil, S. A., Nov. 6-12. Dr. Bernard N. Halpern, 197 boulevard St. Germain, Paris 7°, France, Secretary General.

INTERNATIONAL CONGRESS OF ANGIOLOGY AND HISTOPATHOLOGY, Fribourg, Switzerland, Sept. 2—. For information write: Dr. Gerson, 4 rue Pasquier, Paris 8°, France.

INTERNATIONAL CONGRESS OF BIOCHEMISTRY, Brussels, Belgium, Aug. 1-6. Prof. C. Liebecq, 17 Place Delcour, Liège, Belgium, Secretary-General.

INTERNATIONAL CONGRESS OF COMPARATIVE PATHOLOGY, Lausanne, Switzerland, May 26-31. Professor Hauduroy, 19 rue Cesar Roux, Lausanne, Switzerland, Secretary-General.

INTERNATIONAL CONGRESS OF CRIMINOLOGY, London, England, Sept. 11-18. For information write: Dr. Carroll, 28 Weymouth St., London, W.1, England.

INTERNATIONAL CONGRESS OF EUROPEAN SOCIETY OF HAEMATOLOGY, Freiburg i,Br., Germany, Sept. 20-24. Prof. Dr. L. Heilmeyer, Hugstetter Strasse, 55, Freiburg i,Br., Germany, Chairman.

INTERNATIONAL CONGRESS OF LIBRARIANSHIP AND DOCUMENTATION, Brussels, Belgium, Sept. 11-18. For information write: Dr. A. C. Breycha-Vauthier, Librarian, United Nations, Geneva, Switzerland.

INTERNATIONAL CONGRESS OF NEUROPATHOLOGY, London, England, Sept. 12-17. Dr. W. H. McMenemey, Maida Vale Hospital for Nervous Diseases, London, W.9, England, Secretary.

INTERNATIONAL CONGRESS OF PLASTIC SURGERY, Stockholm, Sweden, Aug. 1-4, and Uppsala, Sweden, Aug. 5. Dr. Tord Skoog, Uppsala, Sweden, General Secretary.

INTERNATIONAL CONGRESS ON URINARY LITHIASIS, Evian, France, Sept. 2-4. Mr. Rossollin-Grandville, Direction Cachet, Evian (Hte-Savoie), France, Secretary General.

INTERNATIONAL CONGRESS OF UROLOGY, Athens, Greece, April 10-18. Dr. Z. Kaires, 25, rue Voukourestion, Athens, Greece, Secretary General.

INTERNATIONAL HOSPITAL CONGRESS, Lucerne, Switzerland, May 30-June 3. Capt. J. E. Stone, International Hospital Federation, 10 Old Jewry, London, E.C.2, England, Hon. Secretary.

INTERNATIONAL MEDICAL CONGRESS, Verona, Italy, Sept. 1-4. For information write: % Offices of the International Verona Fair, Piazza Bra., Verona, Italy.

INTERNATIONAL SURGICAL CONGRESS, Geneva, Switzerland, May 23-26. Dr. Max Thorek, 1516 Lake Shore Drive, Chicago, Illinois, U. S. A., Secretary-General.

INTERNATIONAL SYMPOSIUM ON CARDIOVASCULAR SURGERY, Henry Ford Hospital, Detroit, Michigan, U. S. A., March 17-19. Dr. Conrad R. Lam, 2799 West Grand Boulevard, Detroit 2, Michigan, U. S. A., Chairman of Program Committee.

INTERNATIONAL SYNDICATE OF GYNECOLOGISTS AND OBSTETRICIANS, Meeting Hall of Medical Societies, Paris, France, June 27-28. Dr. Jacques Courtois, 1, rue Racine, Saint-Germain-en-Laye (S & O), France, Secretary-General.

INTERNATIONAL UNION OF GYNECOLOGISTS AND OBSTETRICIANS, Paris, France, June 27-28. For information write: Dr. J. Courtois, 1, rue Racine, Saint-Germain-en-Laye, France.

JAPAN MEDICAL CONGRESS, Kyoto University and Kyoto Prefectural Medical College, Kyoto, Japan, April 1-5. Dr. Mitsuharu Goto, University Hospital, Medical Faculty of Kyoto University, Kyoto, Japan, Secretary-General.

LATIN AMERICAN ELECTROENCEPHALOGRAPHICAL CONGRESS, Montevideo, Uruguay, S. A., March 21-24. For information write: Dr. R. Arana-Iniquez, Convencion 1287, Montevideo, Uruguay, S. A.

LATIN AMERICAN NEUROSURGICAL CONGRESS, Montevideo, Uruguay, S.A., March 21-24. For information write: Dr. R. Arana-Iniquez, Convencion 1287, Montevideo, Uruguay, S. A.

MIDDLE EAST MEDICAL ASSEMBLY, Campus of American University of Beirut, Beirut, Lebanon, April 22-24. Dr. John L. Wilson, American University of Beirut, Beirut, Lebanon, Chairman.

NEURORADIOLOGIC SYMPOSIUM, London, England, Sept. 13-17. Dr. R. D. Hoare, National Hospital, Queen Square, London, W.C.1, England, Secretary.

PAN-AMERICAN ACADEMY OF GENERAL PRACTICE, Lima, Peru, S. A., Feb. 11-25. Dr. Arturo Martinez, 54 East 72nd St., New York 21, N. Y., U. S. A., Secretary.

PAN AMERICAN CONGRESS OF OPHTHALMOLOGY, Santiago, Chile, S. A., Jan. 15-22, 1956. Dr. Rene Contardo, Huerfanos 930, Of. 74, Santiago, Chile, Secretary General.

VENEZUELAN CONGRESS OF MEDICAL SCIENCES, Caracas, Venezuela, S. A., Nov. 18-26. Dr. A. L. Briceno Rossi, Apartado 4412, Ofic. del Este, Caracas, Venezuela, S. A., Secretary General.

WORLD CONGRESS OF ANESTHESIOLOGISTS, Scheveningen, Netherlands, Sept. 5-10. For information write: Mr. W. A. Fentener van Vlissingen, Noord-Houdringelaan, 24, Bilthoven, Netherlands.

WORLD MEDICAL ASSOCIATION, Vienna, Austria, Sept. 20-26. Dr. Louis H. Bauer, 345 East 46th St., New York 17, N. Y., U. S. A., Secretary-General.

EXAMINATIONS AND LICENSURE

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 21-23. Sec., Dr. D. G. Gill, 537 Dexter Ave., Montgomery 4.

ARIZONA:* *Examination and Reciprocity.* Phoenix, April 13-15. Ex. Sec., Mr. Robert Carpenter, 401 Security Bldg., Phoenix.

ARKANSAS:* *Examination.* Little Rock, June 9-10. Sec., Dr. Joe Verser, Harrisburg.

CALIFORNIA: *Written.* Los Angeles, Feb. 28-March 3; San Francisco, June 20-23; Los Angeles, Aug. 22-25; and Sacramento, Oct. 17-20. *Oral and Clinical Examinations for Foreign Medical School Graduates.* Los Angeles, Feb. 27; San Francisco, June 19; Los Angeles, Aug. 21; and San Francisco, Nov. 13. *Oral Examination for Reciprocity Applications.* Los Angeles, Feb. 26; San Francisco, June 18; Los Angeles, Aug. 20; and San Francisco, Nov. 12. Sec., Dr. Louis E. Jones, Room 536, 1020 N Street, Sacramento.

COLORADO:* *Examination.* Denver, June 14-15. Final date for filing applications is May 13. *Reciprocity.* Denver, April 12. Final date for filing applications is March 14. Exec. Sec., Miss Beulah H. Hudgens, 831 Republic Bldg., Denver 2.

CONNECTICUT:* *Examination.* Hartford, Mar. 8-9. Sec. to the Board, Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic. Examination and Reciprocity.* Derby, March 8-9. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: *Examination.* Dover, July 12-14. *Endorsement.* Dover, July 21. Final date for filing applications is June 15. Sec., Dr. Joseph S. McDaniel, Dover.

DISTRICT OF COLUMBIA:* *Examination.* Washington, May 9-10. Deputy Director, Mr. Paul Foley, 1740 Massachusetts Avenue, N.W., Washington.

FLORIDA:* *Examination.* Jacksonville, June 26-28. Sec., Dr. Homer L. Pearson, 901 N.W. 17th St., Miami.

GEORIGA: *Examination.* Atlanta and Augusta, June 7-8. *Reciprocity.* June 9. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta.

INDIANA: *Examination.* Indianapolis, June 21-23. Exec. Sec., Miss Ruth V. Kirk, 538 K. of P. Building, Indianapolis.

IOWA:* *Examination.* Iowa City, June 13-15. Exec. Sec., Mr. Ronald V. Saf, State Office Bldg., Des Moines.

KANSAS: *Examination and Endorsement.* Kansas City, June 8-9. Sec., Dr. O. M. Davidson, 872 New Brotherhood Bldg., Kansas City.

KENTUCKY: *Examination.* Louisville, June 6-8. Asst. Sec., Mr. Raymond F. Dixon, 620 S. 3rd St., Louisville.

LOUISIANA: *Homeopathic. Examination and Reciprocity.* Subject to Call. Sec., Dr. F. H. Hardenstein, 903 Pere Marquette Bldg., New Orleans 12.

MAINE: *Examination and Reciprocity.* Portland, Mar. 8-9. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, June 21-24. Sec., Dr. Lewis P. Gundry, 1215 Cathedral St., Baltimore 18.

MICHIGAN:* *Examination.* Ann Arbor and Detroit, June 15-17 (tentative). Sec., Dr. J. Earl McIntyre, 118 Stevens T. Mason Bldg., Lansing 8.

MINNESOTA:* *Examination.* Minneapolis, April 19-21 and June 14-16. Sec., Dr. F. H. Magney, 230 Lowry Medical Arts Bldg., St. Paul 2.

MISSISSIPPI: *Examination and Reciprocity.* Jackson, June 27-29. Asst. Sec., Dr. R. N. Whitfield, State Board of Health, Jackson.

MISSOURI: *Examination.* Jefferson City, Feb. 17-18. Exec. Sec., Mr. John A. Hailey, State Capitol Bldg., Box 4, Jefferson City.

MONTANA: *Examination and Reciprocity.* Helena, April 4-6. Sec., Dr. S. A. Cooney, 214 Power Block, Helena.

NEBRASKA:* *Examination.* Omaha, June. Director, Bureau of Examining Boards, Mr. Husted K. Watson, State Capitol Bldg., Room 1009, Lincoln 9.

NEVADA:* *Examination and Reciprocity.* Reno, April 5. Sec., Dr. G. H. Ross, 112 N. Curry St., Carson City.

NEW HAMPSHIRE: *Examination and Reciprocity.* Concord, Mar. 9. Sec., Dr. John S. Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, Feb. 15-18. Sec., Dr. Patrick H. Corrigan, 28 W. State St., Trenton.

NEW MEXICO:* *Examination and Reciprocity.* Santa Fe, Apr. 11-12. Sec., Dr. R. C. Derbyshire, 227 E. Palace Ave., Santa Fe.

NEW YORK: *Examination.* New York City, Albany, Buffalo, and Syracuse, Feb. 15-18. Sec., Dr. Stiles D. Ezell, 23 S. Pearl St., Albany 7.

NORTH CAROLINA: *Examination.* Raleigh, June 20-23. *Reciprocity.* Pinehurst, May 2. Sec., Dr. Joseph J. Combs, 716 Professional Building, Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, July 6-8. *Reciprocity.* Grand Forks, July 9. Sec., Dr. C. J. Glaspel, Grafton.

OHIO: *Reciprocity.* Columbus, April 5. *Written.* Columbus, June 13-15. Sec., Dr. H. M. Platter, 21 W. Broad St., Columbus 15.

OKLAHOMA:* *Examination.* Oklahoma City, June 7-8. Sec., Dr. C. Gallagher, 813 Braniff Bldg., Oklahoma City.

OREGON:* *Examination.* Portland, July. *Reciprocity.* Portland, April 7-9. Exec. Sec., Mr. Howard I. Bobbitt, 609 Failing Bldg., Portland 4.

PENNSYLVANIA: *Examination.* Philadelphia and Pittsburgh, July. Acting Sec., Mrs. Marguerite G. Steiner, Box 911, Harrisburg.

RHODE ISLAND:* *Examination.* Providence, April 7-8. Administrator of Professional Regulation, Mr. Thomas B. Casey, Room 366, State Office Bldg., Providence.

SOUTH CAROLINA: *Examination and Reciprocity.* Columbia, June 27-29. Sec., Mr. N. B. Heyward, 1329 Blanding St., Columbia.

SOUTH DAKOTA:* *Examination and Reciprocity.* Rapid City, July 19-20. Exec. Sec., Mr. John C. Foster, 300 First National Bank Bldg., Sioux Falls.

TENNESSEE:* *Examination.* Memphis, March 30-31. Sec., Dr. H. W. Qualls, 1635 Exchange Bldg., Memphis.

TEXAS:* *Examination and Reciprocity.* Fort Worth, June 20-22. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Reciprocity.* Salt Lake City, Feb. 15. *Examination.* Salt Lake City, July. Director, Mr. Frank E. Lees, 324 State Capitol Bldg., Salt Lake City.

VIRGINIA: *Examination.* Richmond, June 16-18. *Reciprocity.* Richmond, June 15. Address: The Secretary, 631 First St., S.W., Roanoke.

WASHINGTON:* *Examination and Reciprocity.* Seattle, July 10-13. Sec., Mr. Edward C. Dohm, Capitol Bldg., Olympia.

WEST VIRGINIA: *Reciprocity.* Charleston, April 4. Sec., Dr. N. H. Dyer, State Office Bldg., No. 3, Charleston 5.

WISCONSIN:* *Reciprocity.* Madison, April 14-16. The board will also interview applicants for Temporary Educational Permits who have commenced their training previous to the meeting. Sec., Dr. Thomas W. Tormey, Room 1140, State Office Bldg., Madison 2.

WYOMING: *Examination and Reciprocity.* Cheyenne, Feb. 7. Sec., Dr. Franklin D. Yoder, State Office Bldg., Cheyenne.

ALASKA:* On application. Sec., Dr. W. M. Whitehead, 172 South Franklin St., Juneau.

GUAM: The Commission on Licensure will meet whenever a candidate appears or submits his credentials. Sec., Dr. John E. Kennedy, Agana.

VIRGIN ISLANDS: *Examination and Reciprocity.* St. Thomas, June 8-9. Sec., Dr. Earle M. Rice, St. Thomas.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ARIZONA: *Reciprocity.* Phoenix, April 16. Sec., Dr. M. R. Richter, 2910 N. 7th Ave., Phoenix.

ARKANSAS: *Examination.* Little Rock, May 3-4. Sec., Mr. S. C. Dellinger, Zoology Dept., University of Arkansas, Fayetteville.

COLORADO: *Examination and Reciprocity.* Lincoln and Denver, Mar. 2-3. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver.

CONNECTICUT: *Examination.* New Haven, Feb. 12. Address: State Board of Healing Arts, 258 Bradley St., New Haven 10.

DISTRICT OF COLUMBIA: *Examination.* Washington, April 18-19. Deputy Director, Mr. Paul Foley, 1740 Massachusetts Ave., N.W., Washington.

FLORIDA: *Examination.* Miami and Gainesville, May 14. Sec., Mr. M. W. Emmel, Box 340, University of Florida, Gainesville.

IOWA: *Examination.* Des Moines, April 12. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination and Reciprocity.* Detroit and Ann Arbor, Feb. 11-12. Sec., Mrs. Anne Baker, 410 W. Michigan Ave., Lansing 15.

MINNESOTA: *Examination.* Minneapolis, April 5-6. Sec., Dr. Raymond N. Bieter, 126 Millard Hall, University of Minnesota, Minneapolis.

NEBRASKA: *Examination.* Omaha, May 3-4. Director, Mr. Husted K. Watson, 1009 State Capitol, Lincoln.

NEVADA: *Examination.* Reno, April 5. Sec., Dr. Donald G. Cooney, Box 9002, University Station, Reno.

OKLAHOMA: Oklahoma City, April 7-8. Sec., Dr. C. Gallagher, 813 Braniff Bldg., Oklahoma City.

OREGON: *Examination.* Portland, March 5, June 4, Sept. 10, and Dec. 3. Sec., Mr. Charles D. Byrne, State Board of Higher Education, Eugene.

RHODE ISLAND: *Examination.* Providence, Feb. 9. Admin. of Prof. Regulation, Mr. Thomas B. Casey, 366 State Office Bldg., Providence.

TEXAS: *Examination.* Galveston, Houston and Dallas, April 15-16. Chief Clerk, Mrs. Betty Ratcliff, 407 Perry-Brooks Bldg., Austin.

WASHINGTON: *Examination.* Seattle, July 6-7. Sec., Mr. Edward C. Dohm, Capitol Bldg., Olympia.

WISCONSIN: *Examination.* Madison, March 12, and Milwaukee, May 14. Sec., Mr. William H. Barger, 621 Ransom St., Ripon.

ALASKA: On application. Juneau or other towns in Territory as decided by Board. *Reciprocity.* On application. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

*Basic Science Certificate required.

MAGAZINE–TELEVISION REPORT

The following list of current medical articles in mass-circulation magazines and forthcoming network television programs on medical subjects is published each week only for the information of readers of THE JOURNAL. *Unless specifically stated, the American Medical Association neither approves nor disapproves of the articles and programs reported.*

TELEVISION

Sunday, Feb. 20

CBS-TV, 4:30 EST. "Search" presents an analysis of noise and its effect on human beings from the Acoustics Laboratory of the University of California at Los Angeles.

ABC-TV, 9:15 p. m. EST. Ciba's "Horizons."

Monday, Feb. 21

NBC-TV, 9 p. m. EST. "Medic" tells of public health nurses and their work with paraplegics in a story titled "Mercy Wears an Apron."

MAGAZINES

Saturday Evening Post, Feb. 12, 1955

"The Doctors Who Crack Down on Doctors," by Milton Silverman

Doctors in Alameda and Contra Costa counties in California have "spearheaded the medical profession's efforts to improve physician-patient relationships." The author tells of the work of these doctors and gives details on the county society's latest project—the establishment of a so-called "usual fee" schedule.

Parade, Feb. 20, 1955

"A Way to End Thyroid Disease," by Robert P. Goldman

Report on the successful transplant of a thyroid gland, four parathyroids, and four connecting blood vessels from an infant to a woman. Since the work was performed, at Einstein Medical Center, Philadelphia, in November, 1952, the patient has had no recurrence of former thyroid trouble.

DEATHS

Alexander, Robert Julian, Long Beach, Calif.; University of Pennsylvania School of Medicine, Philadelphia, 1911; served as an instructor of anatomy at the University of Utah School of Medicine in Salt Lake City, where he was superintendent of Salt Lake General Hospital and chief of staff of St. Mark's Hospital; served overseas during World War I; on the medical staff of the Douglas Aircraft Company; member of the American Society of Plastic and Reconstructive Surgery; fellow of the American College of Surgeons; died Dec. 11, aged 67.

Anderson, James Thomas, Dallas, Ga.; Atlanta School of Medicine, 1912; died Nov. 14, aged 68, of bilateral pneumonia.

Archer, Willard Eugene ⊕ Anoka, Minn.; Marquette University School of Medicine, Milwaukee, 1926; served on the staffs of the Veterans Administration Hospital in Tomah, Wis., and St. Elizabeth Hospital in Appleton, Wis.; on the staff of the Anoka State Hospital; died in Sacred Heart Hospital in Eau Claire, Wis., Oct. 13, aged 54, of coronary thrombosis.

Battey, Hugh Inman, Biloxi, Miss.; Atlanta School of Medicine, 1910; served during World War I; died in the Veterans Administration Center Dec. 13, aged 66, of Laennec's cirrhosis with ascites.

Brennan, Thomas Joseph, Detroit; Detroit College of Medicine, 1909; on the staff of St. Joseph Mercy Hospital; died in the Grace Hospital Dec. 15, aged 69, of coronary thrombosis.

Brown, Ralph Emerson ⊕ Cayuga, Ind.; University of Illinois College of Medicine, Chicago, 1914; affiliated with Lake View and St. Elizabeth hospitals in Danville, Ill.; died Dec. 10, aged 64, of myocarditis and nephritis.

Cantonwine, Entelles Augustus, Idaho Falls, Idaho; Northwestern University Medical School, Chicago, 1902; died Oct. 3, aged 78.

Capwell, Remington Pendleton ⊕ Providence, R. I.; Bellevue Hospital Medical College, New York, 1894; member of the Industrial Medical Association; served during World War I; for many years chief medical examiner for the Massachusetts Mutual Life Insurance Company; died in the Roger Williams General Hospital Dec. 5, aged 82.

Cohn, Julian ⊕ Los Angeles; University of Texas School of Medicine, Galveston, 1924; assistant professor of medicine at College of Medical Evangelists, Loma Linda and Los Angeles; died Nov. 9, aged 62.

Duffey, Depue Hazen ⊕ Washington, D. C.; George Washington University School of Medicine, Washington, 1928; on the staffs of the Sibley and Garfield hospitals; a director of the McLachlen Banking Corporation; died Dec. 13, aged 51, of aortic stenosis and congestive heart disease.

Egan, Edward Merle ⊕ Chicago; Chicago Medical School, 1931; on the staff of South Chicago Community Hospital; died in St. Luke's Hospital Jan. 4, aged 57, of acute myocardial infarction.

Ely, H. Grant, Dryden, Va.; (licensed in Virginia by years of practice); died Oct. 13, aged 87.

Franklin, George William ⊕ Jefferson, Iowa; Drake University Medical Department, Des Moines, 1898; on the staff of the Greene County Hospital; died Nov. 22, aged 78, of cancer.

Freyberg, Frederick William, Sacramento, Calif.; Rush Medical College, Chicago, 1895; served on the staffs of St. Luke's Hospital in Aberdeen, S. D., and St. Joseph Hospital in Mitchell, S. D.; died Nov. 29, aged 86.

Gak, Herman Ernest, South Onondaga, N. Y.; Albany (N. Y.) Medical College, 1906; served during World War I; for many years town health officer; formerly county coroner; on the staff of the Crouse Irving Hospital, Syracuse, where he died Dec. 2, aged 71, of cerebral thrombosis.

⊕ Indicates Member of the American Medical Association.

Giannini, Pearl E., Louisville, Ky.; University of Tennessee Medical Department, Nashville, 1910; died in the Kentucky Baptist Hospital Dec. 24, aged 69, of myocardial infarction.

Hampton, James Barnette, Duncan, Okla.; Kentucky University Medical Department, Louisville, 1906; died Oct. 11, aged 74, of uremia.

Hill, James Martin, Boyle, Miss.; University of Tennessee College of Medicine, Memphis, 1914; died Dec. 6, aged 75.

Lapsley, Frank Lee, Shelbyville, Ky.; Hospital College of Medicine, Louisville, 1894; health officer and coroner of Shelby County for three terms; served as a member of the school board in Paris, where he was on the staff of the Massie Memorial Hospital; died in New Castle Dec. 1, aged 88.

Laughlin, Joseph Wilson ⊕ Elm Creek, Neb.; University of Nebraska College of Medicine, Omaha, 1913; past president of the Buffalo County Medical Society; for many years a member of the board of education, and county physician; on the staffs of the Good Samaritan and St. Luke's hospitals in Kearney; died in Kearney Nov. 15, aged 69, of acute myocardial infarction.

McGuire, Scott Treadway ⊕ Austin, Texas; University of Louisville School of Medicine, 1941; member of the American Academy of General Practice; died Sept. 19, aged 40.

Mays, Clifford Raymond ⊕ Shreveport, La.; Tulane University of Louisiana School of Medicine, New Orleans, 1930; specialist certified by the American Board of Obstetrics and Gynecology; member of the Central Association of Obstetricians and Gynecologists; formerly vice-president of the Louisiana Gynecological and Obstetrical Society; died in T. E. Schumpert Memorial Sanitarium Nov. 18, aged 48, of rheumatic aortic stenosis.

Palmer, Ralph Fleetwood ⊕ Mesa, Ariz.; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1900; served as mayor; examiner for the Selective Service from 1942 to 1947; founder of Mesa Southside District Hospital; died in Phoenix Dec. 17, aged 79, of coronary arteriosclerosis.

Queener, Rufus Franklin, Middlesboro, Ky.; University of Louisville Medical Department, 1911; died Dec. 23, aged 66.

Rapp, William Monroe, Catskill, N. Y.; Albany (N. Y.) Medical College, 1895; for many years secretary of the Third District Branch of the Medical Society of the State of New York and the Greene County Medical Society; for many years village health officer and school physician; during World War I medical examiner for the local draft board; for six years coroner; on the staff of the Greene County Memorial Hospital; died Nov. 22, aged 83, of heart disease.

Rogers, Floyd Leslie ⊕ Lincoln, Neb.; Northwestern University Medical School, Chicago, 1922; specialist certified by the American Board of Internal Medicine; fellow of the American College of Physicians; past president of the Nebraska State Medical Association and the Lancaster County Medical Society; on the staffs of the Bryan Memorial and Lincoln General hospitals; died Nov. 30, aged 58.

Szumkowski, Leonard S., Chicago; Chicago College of Medicine and Surgery, 1911; died Sept. 11, aged 68.

Turek, James Charles, Chicago; Rush Medical College, Chicago, 1895; died in St. Anne's Hospital Dec. 22, aged 79, of uremia and benign prostatic hypertrophy.

Wickler, Gerhard Siegfried, Indianapolis; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, Germany, 1930; specialist certified by the American Board of Physical Medicine and Rehabilitation; served during World War II; chief, physical medicine and rehabilitation, Veterans Administration Hospital; died in the Veterans Administration Hospital Nov. 18, aged 49, of coronary occlusion with myocardial infarction.

FOREIGN LETTERS

AUSTRIA

Plastic Surgery of the Nose.—At the meeting of the Society of Physicians in Vienna on Oct. 8, Dr. L. Klicpera described the correction of a flat nose. The cartilaginous skeleton of the nasal tip was exposed and extirpated. The osseous skeleton of the nose was separated on both sides laterally and paramesially, narrowing the bony portion of the nose. A soft tissue bed was prepared up to the root of the nose, and a suitably formed portion of costal cartilage was implanted. The continuity was maintained by leaving a small band of periosteum in place. The lateral, alar cartilages were reimplanted. He also described two cartilaginous wrynoses, with a saddle closely above the nasal tip and partial dislocation of the edge of the quadrangular cartilage, which had been broken off at a right angle. There was a marked deviation of the septum, which was broken longitudinally just below the dorsum of the nose and which also showed a transverse fracture in the posterior area of the nasal septum, with complete obstruction of the nasal lumen. In correcting this condition, the anterior edge of the quadrangular cartilage was exposed and a tongue of cartilage 0.75 cm. in width was resected and implanted contralaterally into the present septum to support the nasal tip. The mucosa from one side was exposed, and the quadrangular cartilage along the vomer was completely separated along the dorsum of the nose, bilaterally from the triangular cartilage and vertically to the dorsum of the posterior portion of the nose. The quadrangular cartilaginous plate to the contralateral side was broken, and the cartilaginous portions that still obstructed nasal respiration were resected. The dorsum of the nose from the contralateral side was splinted, and the cartilaginous splint was supported by the embedded septal lamella. The dorsum of the nose was splinted for 8 to 10 days. Additional after-treatment with wrynose apparatus or similar devices was not necessary.

Acute Myocardial Infarction.—At the same meeting, Dr. O. Zimmermann-Meinzingen reported on studies that had been made in a series of 411 patients who had acute myocardial infarction. The primary stage of shock in most patients may be considered as a protective measure to reduce the heart action and the consumption of oxygen. A total circulatory collapse, with death resulting from excessive reflex processes, occurs only rarely. There was a case fatality rate from primary collapse of 3.6% in the speaker's series of 411 cases. Death, primary from cardiac weakness (pulmonary edema or cardiac asthma) or secondary after severe collapse of longer duration, occurred in 10%. The classic treatment of collapse with vasomotor agents such as caffeine, *p*-methylaminoethanolphenol tartrate (Sympatol), cortisone, or arterenol remains unchanged. Blood or plasma transfusion did not seem to be required; transfusions are indicated only in venous collapse resulting from a drop in venous pressure, otherwise they are strictly contraindicated and may place an extra load on an already overloaded heart. Strophanthin may be given only to patients with proved decompensation and only in small doses. The addition of dextrose or fructose is of no importance. Morphine and narcotics are of value in these cases. One-third of the women and one-fourth of the men were treated with anticoagulants, and the mortality rate was thereby reduced to 50% in both groups. The number of reinfarctions and of pulmonary and peripheral embolism was likewise reduced to 50% in men but was almost unchanged in women. The risk of severe hemorrhage was frequent despite constant control of the prothrombin level. Severe hemorrhage occurred in 6.6% of the men and almost 30% of the women. The therapy was definitely successful, however, and treatment with anticoagulants is recommended but should be reserved for hospitalized patients. Prophylactic treatment with anticoagulants is highly questionable, as its success has never been proved and ambulatory treatment is dangerous. Since 50% of the patients had only anginal complaints up to three months before their infarction, and 20% for 5 to 20 years before, immediate prophylactic treatment with anticoagulants would have had to be considered after the first attack of angina pectoris or would have had to be continued for 10 years or longer. Both alternatives must be rejected in practice. The only rational prophylaxis consists of a low fat diet, containing only limited amounts of meat and eggs.

In the war and postwar years there was a pronounced decrease in the risk of thromboembolism and myocardial infarction, but since 1948 there has been a great increase. The heavy burden placed on the nerves during the war did not cause an increased incidence. "Manager disease" is an inaccurate catchword, as 95% of the speaker's patients were laborers or low-salaried workers or their wives.

Diabetes Mellitus.—At the meeting of the Society of Physicians in Vienna on Oct. 22, 1954, Dr. J. Kühnau of Hamburg said that the behavior of the blood sugar should be in the foreground of any analysis of the diabetogenic mechanism. The supply of the organs with fuel depends on the blood sugar level, and it therefore should not drop below a certain minimum. Thus there are several hormonal regulatory mechanisms for which erroneously the term "diabetogenic" had been coined, but insulin is the only agent that depresses the blood sugar. Diabetes is a disturbance of correlation of these endocrine mechanisms in favor of the branches of the intermediary metabolism, to which enzymatic defects may be added. Among the hormonal regulatory factors, the glycogen of the A-cells of the pancreas is of particular importance as the direct antagonist of insulin. The vital function of glycogen in the coordination of those factors that adjust the blood sugar to a medium level was demonstrated by the experimental exclusion of the A-cells of the pancreas. Furthermore, it was shown that combined exclusion of A and B-cells in an otherwise unimpaired pancreas (so-called deinsulinization) is not connected with a significant impairment of the carbohydrate and nitrogen metabolism and that animals without the islands of Langerhans apparently can be kept alive as long as is desired, without showing any evidence of diabetes. This unexpected observation proves that for the genesis of diabetes the disturbance of cooperation of the blood sugar-active hormones is of greater importance than the failure of an isolated factor referring to the intermediary metabolism, as long as the requirements for the compensation of this failure are present.

Modern Psychotherapy.—At the meeting of the Society of Physicians held in Vienna on Nov. 5, 1954, Dr. S. Hift reported the history of a 26-year-old man who jumped out of a hospital window on the first day after a thyroidectomy. The patient was unconscious for 15 hours and suffered fractures of his skull and left femur. He was found to be a schizophrenic who acted in an attack of anxiety. Postcommotional confusion seemed to be serious but was controlled first with a strictly conducted course of therapy with chlorpromazine (10-[γ-dimethylaminopropyl]-2-chlorophenothiazine hydrochloride). After several days, however, a severe catatonia developed. He was given electroshock therapy and large doses of succinyl choline chloride, a quaternary ammonium compound, with complete mitigation of the convulsions. After removal of the immediate danger to life, the classical treatment with insulin was used, resulting in a complete remission of schizophrenia. Group psychotherapy was then started to reduce the risk of recurrence.

Hypertension.—Dr. C. Heymans, Gent, at the same meeting, said that adequate stimulus for physiological regulation of blood pressure is fluctuation in the arterial blood pressure itself. This affects the sensory nerve endings in the area of the aortic arch and of the carotid sinus, and thus the factors by which the blood pressure is conditioned are reflexly adjusted so that marked arterial blood pressure fluctuations are promptly prevented or reduced to a great extent. Experimental results recently showed that resistance to the dilatation of the arterial walls in which the receptors of the aortic arch and of the carotid sinus are

The items in these letters are contributed by regular correspondents in the various foreign countries.

located plays a principal part in the self-regulation of blood pressure. These experimental results also proved that a decrease in dilatability of the arterial wall of the carotid sinus in which the receptors of the blood pressure regulators are located may cause a marked lowering of blood pressure in arterial hypertension. These results, therefore, support the concept that an increase in the dilatability of the arterial walls might be the primary cause of hypertension.

Prevention of Postoperative Complications.—Dr. R. Oppolzer reported at the same meeting that prolonged anterior sympathetic block with procaine instillation was used in the treatment of acute pancreatitis in patients who underwent laparotomies because of doubtful or erroneous diagnosis. The experience of many surgeons that the course after major operations on the upper abdomen is much milder and is associated with less severe complications if the operation is performed with the aid of anterior splanchnic anesthesia rather than other forms of anesthesia induced the speaker to use this anesthesia as an adjunct to thiopental sodium and intratracheally given anesthesia for the prevention of harmful viscerovisceral reflexes. Work was continued in this direction by the use of splanchnic anesthesia at the end of such difficult operations as total colectomy, extensive gastric resection, and other major abdominal operations performed with the aid of intratracheal anesthesia. A prolonged favorable blocking effect was obtained by introducing, retroperitoneally at the typical location between the aorta and the inferior vena cava, a soft small polyvinyl tube through a hollow needle and by drawing it out from the abdominal wound and instilling 10 to 20 cc. of a 0.5% solution of procaine every two to three hours for two to three days if necessary until normal peristalsis and defecation occurred. This method of anterior sympathetic block was used in 10 patients who underwent major radical operations and whose postoperative course was notably free of complications. There was early evacuation of the intestine on the second and third postoperative days, and atony and vomiting were absent. Postoperative visceral pain was greatly reduced. This method is particularly suitable for patients with severe pancreatitis in whom, in the presence of peritonitis, exploratory laparotomy was performed because of doubtful or erroneous diagnosis. The speaker reported on two patients with severe, hemorrhagic, pancreatic apoplexy whose lives were maintained for one to two weeks despite complete dry necrosis of the entire pancreas, severe diabetes, and uremia, probably caused by adrenal cortical hyperfunction (Cushing's syndrome), of which the patients eventually died. This technique also may be used concurrently with alcohol injections to alleviate pains associated with inoperable carcinoma of the stomach, gallbladder, and pancreas.

Antibiotic Therapy.—At the meeting of the Society of Physicians in Vienna on Nov. 12, 1954, Dr. A. Zink of Zurich said that from a survey of the antibiotics used today it appears that, next to penicillin, which in its group is not surpassed by any antibiotic with respect to its innocuousness and therapeutic width, the tetracyclines (tetracycline, chlortetracycline, and oxytetracycline) are gaining in importance. Genuine toxicity (neurotoxicity, hepatotoxicity, nephrotoxicity, and hemolysis), nontoxic reactions, and side-effects must be distinguished. Penicillin and the tetracyclines are not toxic. The side-effects of the tetracyclines (sprue, rhagades, glossitis, and black, hairy tongue) are caused by an irritation of the gastric and intestinal mucosa or by the antibiotic effect on the intestinal flora and its vitamin B synthesis. Furthermore, the use of these antibiotics favors an overgrowth of resistant micrococci (staphylococci) and pathogenic fungi that may cause pneumonia, enterotoxic diarrheas, or even toxemic vascular collapse if appropriate prophylactic measures are not taken promptly. The antibiotic effect of the wide-spectrum antibiotics on the intestinal flora causes increased appetite. Even in severely ill persons and in patients after operation, physiological stimulation and normalization of the intestinal function and digestion results from elimination of the bacterial toxins and products of disintegration. This contributes greatly to the unburdening of the liver. The problem of resistance has been overestimated. So far only the resistance of micrococci to penicillin is of real clinical importance. Genuine resistance developing in the course of treatment with a wide-spectrum antibiotic taken by mouth is rare, even with prolonged treatment. Gonococci, meningococci, pneumococci, brucellas, corynebacteria, spirochetes, amebas, and many other pathogens seem to have little or no adaptability to antibiotics. In vitro tests delay and make more expensive the specific treatment and are of little clinical value. An abundance of factors such as the pH and sugar content of the medium and the solubility, stability, and concentration of the antibiotic may influence the action of various antibiotics. A combination of two antibiotics should be considered only in patients in whom the pathogen is resistant to a single antibiotic, such as those with subacute bacterial endocarditis. The same combination of antibiotics may in one instance exert a synergistic effect and in another an antagonistic effect. No combination is constantly synergistic or antagonistic. The quantitative portion of each antibiotic is important. Indiscriminate use of combinations favors the development of sensitivity in the patient and probably does not prevent the occurrence of resistance in the pathogen.

BRAZIL

Studies on Antibiotics.—A study on the action of antibiotic drugs was performed by Dr. Wilson Fry, of the Medical Academy of São Paulo. His research took place in the Hospital das Clínicas of São Paulo and he concluded that: 1. The sulfonamides effectively control hemolytic streptococcic infections, but they have been superseded by the antibiotics. 2. Penicillin is more effective than the sulfonamides in the treatment of hemolytic streptococcic infections and in most infections caused by gram-positive organisms. 3. Streptomycin effectively controls tuberculous infections, but its greatest drawback is the development of resistance, which can be avoided in part by the use of combinations of antibiotics. 4. Chlortetracycline, oxytetracycline, chloramphenicol, and tetracycline are bacteriostatic antibiotics useful in many surgical infections. 5. Erythromycin is a bacterial antibiotic effective by oral and parenteral routes. 6. Bacitracin is not as nephrotoxic as was assumed but is effective, especially when used in combination with other bactericidal antibiotics. 7. Neomycin is the best agent against Proteus vulgaris and polymyxin against Pseudomonas aeruginosa; both may only be used locally. 8. It is important that sensitivities of pathogens to antibiotics should be determined in order to render antibiotic treatment safer and cheaper (*Rev. med. e cir São Paulo* **14**:337-350 [July] 1954).

Experimental Infection with Schistosomas.—Researches on infection with Schistosoma mansoni performed in the Instituto Butantan of São Paulo by Dr. José M. Ruiz were reported in volume 25 of *Memorias do Instituto Butantan*. One coati (Nasua narica) and five gambás (Didelphis paraguayensis) were experimentally infected with S. mansoni. Schistosoma ova were found in the stools of the coati on the 54th day after infestation. The first gambá did not show any apparent infection; examination of stools and of the colonic and rectal mucosa and perfusion of the portal system were negative. Two gambás had a weak infection with only male schistosomes. The fourth gambá presented a bisexual infection (16 males and 2 females) but only in the autopsy, 4 months and 11 days after exposure to infection, was an ovum found in the unpassed feces. The fifth gambá was still alive at the time of the report. Examination of its stools for ova were all negative.

CHILE

Congress of Endocrinology.—The third Pan-American Congress of Endocrinology was held in Santiago in November. Dr. A. Asenjo and his co-workers presented a paper on hypophysial tumors and malformations that analyzed the findings in 169 patients with intrasellar and extrasellar malformations that might have affected the pituitary functions. Chromophobe adenomas were present in 80 (62 of these had gonadal deficiency, thyroid deficiency, and obesity and 7 had deficiency of the adrenal cortex). Craniopharyngiomas were present in 44 (28 of these had gonadal deficiency; 25 had typical obesity; 13 had hypothyroidism; and 2 of 6 patients under 10 years of age had hypothalamic symptoms and sexual precocity). Eosinophilic or

mixed adenomas were found in 30 patients. The main clinical features were hypersecretion of somatotropic hormone (acromegaly), gonadal deficiency, and normal or increased thyroid function. Thyroid and/or adrenal cortical deficiency were found only in the final stages in this group. Other intrasellar and extrasellar tumors were found in nine patients, and in the remaining six the endocrine syndrome was similar to that of those with chromophobe adenoma when the growth had affected the hypothalamic-pituitary region. The endocrine syndrome is important, because it leads to the causative diagnosis and provides valuable data regarding prognosis (the greater the pituitary hypothalamic damage, the greater the surgical risk and mortality). Roentgenograms of the skull, encephalography, ventriculography, arteriography, and a study of the optical tract and the neurological symptoms are useful in evaluating the encephalic damage and the projection of the growth. The involvement of the third ventricle and the presence of mental signs make the prognosis worse.

Dr. G. B. Wislocki of Boston discussed the histophysiopathology of the placenta. The syncytial trophoblasts of human placentas of two or three months' gestation contain lipid droplets that give histochemical reactions suggesting the presence of ketosteroids. The syncytium also gives reactions for glycoprotein, ribonucleoprotein, and various enzymes. Mitochondria are also exceedingly abundant. The presence of cytoplasmic basophilia and a periodic acid-Schiff reaction in the peripheral trophoblast suggests that it may be the site of the formation of chorionic gonadotrophin. With the electron microscope the surface of the syncytial trophoblast covering the chorionic villi at two or three months' gestation is observed to be abundantly provided with microvilli that project into the intervillous space. The syncytium appears to absorb maternal blood plasma by pinocytosis, resulting in large fluid-filled vacuoles in the outer zone of the syncytial cytoplasm. The syncytium is extremely rich in archiplasm (ribonucleoprotein), which forms vesicles with beaded contours. In the human placenta at full term the syncytial trophoblast is covered with short microvilli. Numerous flattened residual Langhans cells, located between the syncytial trophoblasts and the basement membrane of the villi on which the trophoblasts rest, are also seen.

The clinical evolution and some metabolic aspects of the nephrotic syndrome treated with rice diet and small doses of corticotropin (ACTH) were discussed by Dr. L. M. de Assis and his co-workers of São Paulo, Brazil. Nine nephrotic patients with ages varying from 4 to 18 years were put on Kempner's rice diet, and seven of these patients received one or more courses of treatment with corticotropin. With the rice diet a great reduction in the edema was noted. The beneficial effects of corticotropin were generally obtained as a rebound phenomenon soon after the interruption of the treatment with this hormone. Average daily doses were 50 mg. In the two patients treated with rice diet alone edema disappeared and serum cholesterol and protein levels returned to normal. The nitrogen balance was maintained at all times. The results obtained by combining this treatment with administration of 10 mg. of corticotropin daily were the same as those obtained when larger doses were given, with an advantage that no undesirable effects were observed with the small dose.

Hans Selye of Canada discussed the adrenal cortex and the mechanism of inflammation. Earlier studies have shown that, during stress, inflammatory phenomena are inhibited. This inhibition is largely nonspecific. An analysis of the mechanism through which stress influences inflammatory phenomena has showed that corticotropin, through the production of antiphlogistic corticoids (glucocorticoids), can inhibit inflammatory processes. Conversely, somatotropic hormone and the prophlogistic corticoids (mineralocorticoids) stimulate inflammatory phenomena. It is not only the actual increase in pituitary and corticoid hormone production that matters but also the "conditioning" (through some extra-adrenal actions of stress) of tissue sensitivity to those substances. Thus, even in rats in whom adrenalectomy has been done and who are maintained on minimal doses of cortisone, which are in themselves insufficient to inhibit inflammation, exposure to stress proved to be strongly antiphlogistic. On the other hand, rats in whom adrenalectomy has been done and who have been exposed to the same stressor agents, showed no inhibition of inflammation during maintenance on desoxycorticosterone acetate. The speaker concluded that neither the direct effects of stress nor the antiphlogistic corticoids are the cause of the anti-inflammatory effect of stress situations but rather a conditioning through stress for antiphlogistic corticoids. Recent experiments have shown that in rats in whom adrenalectomy has been done even such typical antiphlogistic or antihistaminic drugs as salicylates, Irgapyrin (equal parts of phenylbutazone and aminopyrine), and promethazine (Phenergan) inhibit inflammation only if the animals are given maintenance therapy with cortisone and not desoxycorticosterone acetate. These drugs are thus not truly antiphlogistic in themselves nor do they act merely by increasing antiphlogistic hormone secretion, as has been claimed by several investigators, but they act by sensitizing tissues for the antiphlogistic hormones.

Clinical pathology of the adrenal cortex was discussed by Dr. A. Segaloff of New Orleans. In general, hyperfunctioning lesions of the adrenal cortex are productive of hydrocortisone or androgens, or both. Adrenal hyperplasia with virilism is associated with a substantial increase in the urinary 17-ketosteroids and pregnanediol chromogens. There is more commonly a normal or low normal formaldehydogenic corticoid. The administration of 50 mg. of hydrocortisone acetate by continuous intravenous drip over a period of 24 hours causes a spectacular drop in the ketosteroid excretion and a less marked drop in the pregnanediol chromogens. The administration of corticotropin on the other hand leads to a much greater rise in the pregnanediol chromogens rather than the modest rise of 17-ketosteroids seen in this condition.

Adrenal hyperplasia, associated with adrenal cortical hyperfunction (Cushing's syndrome), shows no effect from the intravenous administration of hydrocortisone acetate on either the normal or more commonly elevated 17-ketosteroids. The same is true of the effects on the almost always elevated formaldehydogenic corticoids. There is rarely any detectable pregnanediol in these patients, and in the few instances when it is the level is low. The administration of corticotropin here leads to a much greater rise in 17-ketosteroids but no appearance of pregnanediol, though frequently there is a substantial rise in the urinary formaldehydogenic corticoids. When adrenal tumors are found, whether they are virilizing or of the Cushing's type, or both, the steroid values can be either moderately or substantially elevated in all categories or in any combination of them, and in general there is no effect on the steroid excretion after the intravenous administration of either hydrocortisone acetate or corticotropin. Adrenal tumors should be removed. In patients with adrenal hyperplasia with virilism the speaker prefers intramuscular injections of hydrocortisone acetate at widely spaced intervals. In patients with adrenal cortical hyperfunction either subtotal or total removal of the hyperplastic adrenals is preferred.

The use of radioactive iodine in patients with hyperthyroidism was discussed by Dr. J. T. Fisher and his co-workers of Uruguay. In a group of 116 hyperthyroid, euthyroid, and hypothyroid patients the serum cholesterol level, basal metabolic rate, and urinary output of I^{131} was compared. The urinary output of radioiodine agreed with the clinical findings in 91.2%. In 56 patients with hyperthyroidism, treatment with radioiodine was followed by frank improvement in 27; partial improvement in 21, and failure in 8. The good results obtained in patients with nodular goiters are especially remarkable.

DENMARK

Changing Causes of Death.—During the period 1921-1950 there have been some remarkable changes in the causes of death in Denmark, Finland, Norway, and Sweden, despite the fact that cultural and social conditions have been much the same in the different Scandinavian countries. In the *Danish Medical Bulletin* for November, 1954 (vol. 1, no. 6), Dr. Marie Lindhardt points out the big drop in the death rate for pulmonary tuberculosis among children, credited to a great extent to BCG vaccination, which has been more widely used in the Scandinavian countries than elsewhere. Since 1931 the mortality from cancer of the lungs in Norway and Denmark has increased by about 400% in men and only by about 100% in women. The decline in the mortality from acute and chronic nephritis is

related to the successful treatment of scarlet fever, though it should be noted that this decline began before the introduction of penicillin. The mortality from gastric ulcer among men shows a marked rise in Denmark, and the mortality from heart disease in the age group 25 to 54 years at the beginning of the period under review was higher for women but is now much higher for men.

Lindhardt's figures reveal a curious difference in the mortalities from accidents and suicide in the different Scandinavian countries. It was to be expected that such a seagoing population as that of Norway would have a much higher shipping and fishing death rate than either Sweden or Denmark, but how is Denmark's relatively high suicide rate of 2.66% of the total deaths in the period 1946 to 1950 to be explained? For Norway it was only 0.73%, and for Sweden it was 1.49%. In the past few years the suicide rate has been falling in Denmark, among women in particular, and there has been a downward shift in age. Formerly it was mostly older persons who took their lives, but during the past two decades there has been a fairly big rise in Denmark in suicides of persons under the age of 45. At the beginning of the period under review hanging was the favorite method of suicide among men in Denmark, whereas now poisoning is chiefly resorted to. In Sweden there is a rising suicide rate among young women, whereas it is falling among elderly men. The suicide figures quoted by Lindhardt probably represent underestimates, as there is a natural tendency to give some cases of suicide the benefit of the doubt and to report them as fatal accidents.

SWEDEN

National Health Insurance.—On Jan. 1, 1955, the new national health insurance scheme came into force. It is a stupendous undertaking about which the Swedish Medical Association has had grave doubts. Hitherto voluntary health insurance has been developing so effectively that it has been extended to nearly 70% of the country's population with satisfactory results. The association would have preferred to develop this voluntary system instead of plunging into a system of compulsory insurance with its risks of financial embarrassment and unhealthy exploitation. The association will, however, do its best to guarantee the smooth working of the new system, which will need much cooperation on the part of all concerned if various details are to be worked out satisfactorily. Much of the old machinery of voluntary health insurance will be retained, with the patient still free to choose his physician and to pay him directly before being refunded for his outlay by the insurance authorities. Every person over the age of 16 comes into the program, and, as his children are also provided for in it, practically the whole of Sweden comes into the scheme, which is composed of two main parts. One part deals with sickness insurance and is concerned with remuneration for medical care at home or in the hospital and for journeys to and from the hospital or a physician's office. The other is concerned with remuneration for loss of earnings entailed by sickness. Provision is also made for maternal and infant welfare.

For certain diseases certain drugs are to cost the patient nothing; there is to be a discount for certain other drugs, and others must be paid for in full. These distinctions may prove puzzling for the physician who has to remember which is which when he prescribes. The diseases qualifying for free drugs make a formidable list, from pernicious anemia to paralysis agitans. Thus for pernicious anemia the patient may be given some liver or stomach preparation, vitamin B_{12}, or a combination of these free. The victim of paralysis agitans may receive atropine or some alternative drug free. Other diseases qualifying for free drugs are diabetes, myxedema, adrenal cortical hypofunction (Addison's syndrome), parathyroid tetany, sprue, glaucoma, epilepsy, chronic bronchial asthma, chronic cardiac insufficiency, tuberculosis, and certain specified forms of cancer. The numerous forms to be filled in and signed under the new scheme threaten to overwhelm the medical profession with clerical work, but the framers of the new scheme have cooperated with the Swedish Medical Association in doing their best to shunt as much as possible of purely clerical work onto persons other than physicians. With good will on all sides it is to be hoped that the machinery of the new system will come to look less complex than it does at present.

Poliomyelitis Research.—Since 1952 three laboratories have been cooperating in poliomyelitis research. They are the Virus Institution of the Caroline Institute, the Virus Department of the Bacteriological Central Laboratory of the City of Stockholm, and the State Bacteriological Laboratory. In a series of four articles on the subject, published in *Nordisk medicin* for Dec. 2, 1954, some of the most recent work on poliomyelitis is discussed with special reference to the contributions made by Swedish scientists. Prof. Gunnar Olin points out that as long ago as 1925 an encouraging attempt was made in Sweden by Davide, who administered the serum of convalescent patients to 73 persons during a local epidemic. The above-mentioned laboratories are now working on a formaldehyde-treated vaccine against poliomyelitis, and Wesslén and Faxén have studied the incidence of immunity to poliomyelitis in five age groups in different parts of Sweden (3-5, 8, 13, 20-29, and 44-55 years). As many as 50% of the children in the youngest age group in Stockholm have been found to have antibody in response, most probably, to the great epidemic of 1953. This antibody rate rose gradually with the age of the persons examined, reaching over 80% in the highest age group. Olin calculates that in the light of present knowledge, Sweden would require at least 3 million donors yearly, if all the children up to the age of 10 years were to be immunized with gamma globulin. The most important outcome of recent gamma globulin research is the proof that a small quantity of antibody affords some protection. Gard admits that in the last 35 years the attack rate of poliomyelitis in Sweden has shown an eightfold increase, mainly due to the involvement of ever older age groups. He believes that at present the most rational approach to checking poliomyelitis seems to be a concentration of the attack on early sporadic cases and small outbreaks in April or May. Svedmyr gives a brief account of the preliminary results of the virological diagnosis of poliomyelitis during the outbreak of 1953 in Stockholm. Type 1 viruses were found in about 80% of 139 patients with paralytic cases.

Treatment of Virus Pneumonia.—Since 1950 the children's department of a hospital in Falun, which is under the care of Dr. B. Hamne, has dealt with 55 cases of virus pneumonia. In most of them the onset was sudden, and in all of them there were characteristic radiological changes in the lungs. In the journal of the Swedish Medical Association for Dec. 10, 1954, Dr. Anders Berglund has compared the effect of the various measures used, from expectant treatment to the most modern antibiotics. The recovery of these patients, which required up to three weeks, seemed to be uninfluenced by any drug, and though Berglund had already learned from the literature to expect little of a sulfonamide or penicillin, he was disappointed to note that the more modern remedies (chloramphenicol, oxytetracycline, and chlortetracycline) seemed incapable of influencing the course of the disease. Thus the 19 patients receiving chlortetracycline were not obviously better off than patients treated with other drugs. Some of the patients treated with chlortetracycline were ill for more than a month before they recovered. In the absence of bacterial complications, Berglund considers hospital treatment unnecessary for patients with this disease.

Prevention of Bacterial Contamination of BCG.—Since Oct. 18, 1954, the BCG laboratory in Gothenburg has changed the containers of the BCG vaccine it issues, substituting small ampuls, with a capacity of 2 ml., for the larger flasks that encourage multiple vaccinations with one and the same sample at different intervals. Dr. O. Sievers, who is in charge of this laboratory, stated (*Svenska läkartidningen* for Dec. 3, 1954) that this change was prompted by complaints of severe local reactions and even general reactions to vaccination with certain samples. Most of these complaints concerned flasks that had been already used on earlier occasions. A bacteriological examination of 525 such suspect flasks showed that as many as 138 of them were bacteriologically contaminated. No such contamination was demonstrable in any flask that had not been opened earlier. Were it not that BCG is a living vaccine, a preservative such as formaldehyde solution might have been added.

CORRESPONDENCE

ENVIRONMENT AND CANCER

To the Editor:—The informative paper by Dr. Ian Macdonald entitled "Environmental Factors of Occupational Origin Related to Carcinogenesis," published in the Jan. 1, 1955, issue of THE JOURNAL, page 5, contains a statement that may give rise to serious misconceptions as to the degree of controllability of aniline-caused cancer of the bladder that eradication of papillomas and removal of the affected person from further contact with the carcinogen may provide. The claim of almost 100% successful prevention of future development of cancer in an effectively exposed worker is apparently based on the concept that marked variations exist in the susceptibility of different persons to the carcinogenic action of β-naphthylamine and benzidine and that such variations account for the alleged fact that in only 30 to 40% of the exposed workers do precancerous lesions develop.

The facts in this matter are as follows. There is adequate industrial evidence that severe and prolonged exposure of workers to β-naphthylamine has in past decades resulted in the development of cancer of the urinary bladder in from 50 to 100% of the exposed persons. I have recently been informed from reliable sources that such conditions still exist among the long-term employees at one β-naphthylamine operation in the United States. Variations in individual susceptibility therefore play a limited role in the face of an overwhelming exposure to a potent carcinogen. It is, moreover, not established that the eradication of papillomas and removal from further contact with the carcinogen provides reliable protection against the subsequent development of malignant manifestations in the bladder. In fact, cancer of the bladder often appears without any previous formation of papillomas and may develop and attain considerable dimensions in a bladder found only six months previously to be free from any abnormal manifestations at cystoscopy. Such a rapid development of an occupational cancer is by no means peculiar to cancers of the bladder caused by aromatic amines. Chromate workers with advanced cancer of the lung sometimes had a normal roentgenogram of the chest six months before the discovery of the cancer. Moreover, occupational cancers may appear many years after the cessation of exposure to the specific agents; not all of these cancers develop from preexisting precancerous lesions, but some appear *de novo* in the bladder mucosa. These facts not only deserve proper medical consideration but also are of definite medicolegal importance.

Although some of the American manufacturers of β-naphthylamine have routinely had periodic cystoscopic examinations made of the exposed workers for almost 20 years, there has occurred a considerable and continued increase in the number of cases of cancer of the bladder during the past 15 years. The effective control of cancer hazards related to work with β-naphthylamine, in fact, has proved to be so difficult and frustrating that its English, Swiss, and German manufacturers discontinued its further production several years ago. It is thus obvious that the serious problem of the hazard of cancer of the bladder among workers exposed to certain aromatic amines cannot effectively be controlled by the removal of "precancerous" papillomas and by the subsequent removal of the workers thereby affected from the dangerous operations.

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MANAGEMENT OF TUBERCULOSIS

To the Editor:—I would like to call attention to some inaccuracies in an editorial entitled "Management of Tuberculosis" on page 1502 of THE JOURNAL of Dec. 18, 1954. I believe that these inaccuracies present a misleading picture of current trends in tuberculosis management. The editorial refers to an article by R. A. Goodwin in the *Annals of Internal Medicine* for August, 1954, and purports to discuss his statements on the modern management of tuberculosis. The editorial states, "Although pneumothorax fell into disrepute because of the danger of empyema, bronchopleural fistula, unexpandable lung, or loss of pulmonary function due to thickening of the pleura, its use, preceded by two or three weeks of antimicrobial drugs, is being revived and administration of the drugs continued along with the pneumothorax." In Goodwin's article, the following statement appears: "In current practice, the use of pneumothorax has almost disappeared." Goodwin's statement is accurate, whereas the statement in the editorial, namely, that pneumothorax is being revived, is true of only a very small minority of tuberculosis workers. The editorial goes on to state, "Good evidence has accrued to show that such complications as empyema and thickening of the pleura rarely occur in patients treated in this manner." No such statement appears in Goodwin's article. I do not believe that good evidence has accrued to prove the above contention. The paucity of complications of pneumothorax today is due to the abandonment of the procedure.

The editorial goes on, "Collapse by pneumoperitoneum is still used. . . ." This gives the impression that pneumoperitoneum as a method of collapse is being discarded. This is completely untrue, since pneumoperitoneum is being used on a vast scale in most of the large institutions in the United States. The New York Tuberculosis and Health Association reports that 19 New York hospitals gave 546 refills in 1945 and 34,719 refills in 1952. During these same years, 51,049 pneumothorax refills were given in 1945 and 14,274 in 1952. This trend toward the abandonment of pneumothorax and the vast increase in the use of pneumoperitoneum is occurring not only in the New York area but in most of the large institutions throughout the country. Two controlled studies reported recently found that pneumoperitoneum helped to close cavities. At the last meeting of the American Trudeau Society, a panel of discussants favored the use of pneumoperitoneum.

I believe that physicians should be informed that authoritative opinion today (1) favors the use of pneumoperitoneum (with chemotherapy) in many cases of cavitary tuberculosis as definitive treatment or as preparation for surgery and (2) holds that pneumothorax should be used only in those rare cases in which ideal indications exist for its induction and continuance.

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SOCIAL SECURITY

To the Editor:—I have just read a letter in THE JOURNAL of Jan. 1, 1955, page 77, by Dr. Louis Keating, a councilman of Yonkers, N. Y. Dr. Keating airs some of his beliefs pertaining to social security legislation and how this specifically affects physicians. I consider this a very controversial subject, and I am sure that Dr. Keating realizes that many of his colleagues will disagree with both him and me. With all due respect to the doctor, I would like to present my viewpoint and even, if I may, some criticism, or perhaps I should say some questioning of his statements.

Dr. Keating says that he is a nonconformer by race, birth, and choice. I am not sure what is a nonconforming race or birth. And why should anyone choose to be a nonconformer without mention of the thing not being conformed with? He looks on social security as bread he has earned. The tense used puzzles me, or does he mean earned as a councilman? We are discussing physicians, I thought. The doctor sent out letters, 10,000 of them, to the voters of Yonkers requesting their support of his candidacy, yet in opening his discourse he disclaims having ever sought political office. Dr. Keating does not believe that a concept of life that renders the people a larger share of the bread they have earned is going to enslave anybody. I would like to break that complex statement down a little. I too am against

enslaving anybody. Who believes that anyone should not have all the bread he earns? My concept of life is that everyone is entitled to his earnings in full, with the possible exception of the tax thereon. In his closing statements the doctor intimates that the rich man has outsmarted or outcheated his father and that such a rich man, who is anyone of means, should not rightfully be permitted to transmit his wealth to his children. That, at least, is my interpretation of another complexity of statement, which includes a question of whether such an inheritance could be called a dole.

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PSEUDOHERPETOLOGY

To the Editor:—A communication, which in our opinion was somewhat startling, appeared in The Journal for Jan. 2, 1954, page 81, over the signature of David I. Macht, M.D., of Baltimore. It is entitled "Serpents' Sense of Hearing." The evidence presented consists of a heterogeneous assemblage of dubious "data" from Scripture, Shakespeare, and newsprint; these are common enough references and authorities, to be sure, but not of scientists. Without laboring the details involved in the various scientific investigations of this problem, we quote a summarizing statement (Prosser, C. L., and others: Comparative Animal Physiology, Philadelphia, W. B. Saunders Company, 1950, p. 489) concerning the basic anatomic fact that snakes cannot hear: "Snakes have no middle ear, and the outer end of the columella is attached to the quadrate bone of the skull. This arrangement makes snakes (even the cobra!) insensitive to air-borne sounds but very sensitive to earth-borne vibrations, such as those resulting from the footfalls of approaching animals. There is considerable evidence that rattlesnakes cannot hear their own rattling."

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TRIETHYLENE MELAMINE

To the Editor:—The paper entitled "Triethylene Melamine in Bronchogenic Carcinoma with Vena Caval Obstruction" by Saline and Baum, which appeared in The Journal of Dec. 18, 1954, page 1493, has come to our attention. It seems to us that this article is too enthusiastic and does not recommend the precautions that must be used when giving triethylene melamine. It is well known that, owing to individual patients' tolerance, a daily dose of 5 mg. of triethylene melamine for four days may cause severe toxic reactions with suppression of the marrow in some patients. The case reports are such that we do not feel that conclusions can be drawn from them about the effectiveness of triethylene melamine.

In case 1, the patient received numerous courses of nitrogen mustard and radiotherapy and in between these treatments received some therapy with triethylene melamine. To infer that this patient was benefited by triethylene melamine would be to draw a most tenuous conclusion. In case 2, it is conceivable that some improvement followed triethylene melamine therapy, but probably no more than could have been expected from nitrogen mustard or x-ray therapy. Severe marrow depression definitely developed from the triethylene melamine, and at that time further triethylene melamine should not have been given. It was given, and no further statement was made as to what happened to the white blood cell count or the platelet count. In the comment, it is stated that triethylene melamine does not cause vomiting. Nausea and vomiting have occurred in patients who have received triethylene melamine orally in much smaller doses than those reported in this paper, although the incidence of such reactions is not as great as that seen after nitrogen mustard therapy.

A strong word of caution must be uttered against the routine use of this drug. Marrow depression may occur and may be severe. It would be interesting to know how good the response was to cortisone therapy in the one case in which the authors stated improvement of marrow depression occurred. We have not encountered improvement after cortisone therapy in patients with marrow depression from triethylene melamine. We think that triethylene melamine can be used in the treatment of various types of neoplastic diseases and that its range of activity is almost the same as that of the nitrogen mustards. Except that it can be administered orally, it has no advantage over nitrogen mustard. Because of this ease of administration and the lack of consistency in effect for a given dosage, it may indeed be a drug that is more dangerous and undesirable than intravenously administered nitrogen mustard.

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ETHER ANALGESIA

To the Editor:—Dr. J. F. Artusio's report on ether analgesia during major surgery in the Jan. 1, 1955, issue of The Journal, page 33, should be evaluated and the reason for success determined quickly. Anesthetists all down the years have aspired to this achievement. In my first five years of practice I almost wrecked my career attempting it. I have my own facts and figures on mortality and morbidity, and I know they worsened (especially the incidence of pulmonary embolism) as I became more adept at skating on thin ice. An analysis of his report leads me to suggest that there is *one* outstanding factor in his technique that is new since the late 1930's: he has the means of preventing the hyperventilation that ether produces, namely, curare and thiopental (Pentothal) sodium. Someone equipped to do a scientific investigation on minute-to-minute blood carbon dioxide levels had better determine the facts before irreparable harm is done by novices attempting to imitate Dr. Artusio's skillful technique.

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MEDICAL RESEARCH FELLOWSHIP IN SOUTH AFRICA

To the Editor:—May I, through the courtesy of your columns, draw the attention of medical practitioners registered in South Africa, who may at present be in the United States, to the fact that applications may be submitted for the 1955 award of the Eli Lilly Medical Research Fellowship. The value of the fellowship is $250 a month for 12 months plus return traveling expenses to the point of study in the United States of America. Further details can be obtained by writing to me. The closing date for applications is April 15, 1955.

H. A. Shapiro, M.D.
Honorary Chairman, Selection Committee
Eli Lilly Medical Research Fellowship (South Africa)
P. O. Box 7605, Johannesburg, South Africa.

GERONTOLOGY IN MEDICAL PRACTICE

To the Editor:—The interesting letter of Dr. John Calvin Cutter in The Journal of Sept. 25, 1954, page 447, revealed a life similar to my own. I was born Sept. 22, 1867, graduated from Columbia University College of Physicians and Surgeons in 1893, and served nearly three years in hospitals (New York, Sloane, Foundling). Since then I have been in private practice in internal medicine with some associated teaching (New York Polyclinic). About 50 years ago, at a meeting of the Bronx Medical Society, we were considering attainment of old age. I ended my remarks with this prescription in rhyme.

More golf and less hurry,
Work done without worry,
More milk and less meat,
Toxin free from head to feet.

With me this has worked well. Still get an occasional par.

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GOVERNMENT SERVICES

AIR FORCE

Review Course in Aviation Medicine.—A review course in aeromedical procedures was recently established at the School of Aviation Medicine in Texas. The course, which restates the basic principles and concepts of aeromedicine, is designed for flight surgeons who have several years of practice in the field. It will also assist selected medical officers to prepare for the examination leading to certification in the aviation medicine specialty. The importance of the review course is reflected in its first enrollment. Almost all major commands in the Air Force are represented by the 22 high-ranking medical officers now undergoing the intensive four weeks' study. All of the medical officers are graduates of the school's primary course in aviation medicine.

ARMY

Medical Field Service School Celebration.—At the eighth birthday celebration of the Medical Field Service School at Fort Sam Houston, Texas, Jan. 14, buildings and classroom facilities were dedicated to the memory of nine Medical Service officers who made outstanding contributions to the medical care and administration of Army personnel. Members of the staff and faculty and students assembled to pay tribute to the strides in military medical education made by the school since it became a component of the Brooke Army Medical Center in 1947. More than 85,000 students have graduated in that time, as compared to 50,000 in the previous 27 years the school has been in operation.

The welcoming address was given by Major Gen. William E. Shambora, commanding general of Brooke Army Medical Center. Brig. Gen. James P. Cooney, commandant of the school, officially named the buildings while plaques bearing the new names were uncovered. The unveiling was done by the officers' next-of-kin. The headquarters building was designated DeWitt Hall as a memorial to Brig. Gen. Wallace DeWitt. Blesse Hall was dedicated to the memory of Brig. Gen. Frederick H. Blesse. The school library was named for Colonel Julia C. Stimson, long superintendent of the Army Nurse Corps. The museum was named in honor of Major Oscar Burkard, who was the first officer commissioned in the Medical Administrative Corps. For his bravery during the Chippewa Indian uprising at Lake Leech, Minn., in 1898, Major Burkard was awarded the Congressional Medal of Honor. Lieut. Col. Burt Nelson Coers' name was placed on one of the buildings that housed the Ninth Infantry Regiment during its training period. This was the unit to which Colonel Coers was assigned at the time of his capture. Colonel Coers, who died in a prisoner of war camp in Korea, organized volunteers to care for wounded persons unable to travel during an ordered retreat, even though it meant his own capture.

The sixth monument was dedicated to the memory of Col. Howard T. Wickert, a former commandant of the Medical Field Service School. Another monument bears the name of Col. John L. Schock, a dental surgeon who was captured by the Japanese. He survived the bombing of an evacuation ship and another bombing on Formosa but died of exposure, starvation, and disease aboard another Japanese evacuation ship. Facilities used in training enlisted technicians were named for Col. Edward Bright Vedder, who received most of the credit for the control of beriberi and the treatment of amebic dysentery in the Philippine Islands from 1901 to 1911. A monument was named in honor of Brig. Gen. Raymond A. Kelser of the Veterinary Corps. General Kelser directed the establishment of the first Army veterinary diagnostic and pathological service at the University of Pennsylvania Veterinary School.

Atom-Powered Portable Roentgenographic Unit.—Roentgenograms of wounded soldiers on the battlefield made with a new portable roentgenographic unit powered by radioactive thulium will soon be possible according to Maj. Gen. George E. Armstrong, Army Surgeon General. The new device is capable of producing a roentgenogram without electricity, water, or a darkroom. The complete unit, which also includes a film holder, weighs only 48 lb. and may be carried on the back of a medical aid man. The 0.25 in. lead plate that contains the radioactive thulium protects the user from accidental radiation exposure. Under normal use, the tiny piece of thulium is expected to be effective for about one year, when it will be returned to the atomic pile for rejuvenation. Operation of the machine is so simple that an average person can be trained to use it in a few hours. It can be set up and a picture taken and developed for reading within 5 to 10 minutes. Timing of the exposure is done with a wrist watch. It is anticipated that each unit will cost about $200. Additional tests, however, must be made before the item can be standardized and placed for commercial manufacture.

Editor Wanted for Medical History.—The Surgeon General's Office is seeking the services of a chief publications editor to assist in the development of the history of the Army medical department in World War II. The position requires a person with supervisory ability to plan, direct, and coordinate the editorial and publications activities related to the approximately 25 clinical volumes of the history and also, in the case of more complex manuscripts, to make critical editorial review of them, to determine their literary quality, accuracy of documentation and statistics and their interpretation, and accuracy of quotations and illustrative materials. The position is under U. S. Civil Service and pays $7,040 a year, with $200 increases every 78 weeks up to a maximum of $8,040 per annum. Those interested should write to the Surgeon General, U. S. Army, Washington 25, D. C., Att.: MEDCM-CP.

NAVY

Field Medical Training Course for Reserve Officers.—A two-week course of instruction in field medicine will be conducted at the Marine Corps Base, Camp Pendleton, Calif., commencing March 15. Male Naval Reserve medical personnel residing in the 11th, 12th, and 13th Naval Districts are eligible to attend. Requests to attend this course should be submitted to the commandant of the applicant's home naval district. The course has been designed to provide specialized training, including practical instruction in medical material logistics, preventive medicine in the field, professional treatment of emergency patients, and medical organization with Fleet Marine units. The trainee will receive also practical instruction of a military nature. Working uniform is required. Bachelor officers' quarters will be available. Attendance at this course will not in any way increase the Naval Reservist's vulnerability for orders to extended active duty.

Personal.—Capt. John J. Wells, M. C., was placed on the retired list on Jan. 1, after more than 23 years in the Medical Department of the Navy. Captain Wells is a member of the American Medical Association and has been certified by the American Board of Surgery. His present address is: California State Hospital, Agnew, Calif.

MISCELLANEOUS

Council on Vocational Rehabilitation.—Appointment of 12 members of a National Advisory Council on Vocational Rehabilitation, established under the Vocational Rehabilitation Act of 1954, has been announced by Oveta Culp Hobby, Secretary of the U. S. Department of Health, Education, and Welfare. Miss Mary E. Switzer, director, Office of Vocational Rehabilitation, will serve as chairman of the council, which is authorized under the law to review or recommend initiation of applications for grants for special projects that show promise of making valuable contributions to the vocational rehabilitation of physically handicapped persons. Mrs. Hobby said, "We expect the Council to render an important service to the handicapped people of our nation under President Eisenhower's program for a greatly expanded and improved system of vocational rehabilitation. Its members bring outstanding and varied records of accomplishment in medicine, rehabilitation, education, public relations, labor and management to their task of advising on special projects involving activities in all of these fields."

LAW DEPARTMENT

MEDICOLEGAL ABSTRACTS

Hospitals in General: Exclusion of Practitioners.—The plaintiff, a licensed physician and surgeon, sued the West Coast Hospital Association to restrain it from interfering with his right to use the facilities of the Morton F. Plant Hospital for the performance of major surgical operations. The defendant's motion for a judgment in its favor was denied, and it appealed to the Supreme Court of Florida.

The plaintiff was licensed to practice medicine and surgery in Florida, which practice he carried on in the city of Clearwater. He was a graduate of the medical school of the University of Virginia, a fellow of the Royal College of Surgeons in Canada, and a diplomate of the American Board of Surgery. The hospital, a not-for-profit corporation, was operated by the defendant and was the only such institution in the Clearwater community, serving some 35,000 persons. In 1951 the plaintiff was permitted to perform major operations in the hospital as a "probationary privilege" under the supervision of a member of the surgical department. On Oct. 3, 1951, this "privilege" was withdrawn by hospital officials, and the plaintiff was thereafter completely denied the opportunity to perform major operations in the hospital. The plaintiff contended he had a right to use the hospital's surgical facilities because he had contributed money to the hospital's building fund and because the public had contributed money to the hospital, either directly or by the giving of tax funds. This latter fact, along with the nature of the services rendered by the hospital, made it a quasi-public institution, the plaintiff argued.

The Supreme Court stated that the controlling issue in the case was whether the hospital was a private or a public corporation. If a public corporation, the hospital would be subject to the laws governing publicly owned hospitals and could not deprive the plaintiff of its surgical facilities unless there was a reasonable basis for so doing; if a private corporation, the officers of the hospital, in the absence of a regulatory statute relating to private hospitals, had the sole right to determine who could use its facilities. The Supreme Court found that the hospital was a private corporation, since it was established by private persons and was incorporated under private corporation laws. The fact that public funds, amounting to no more than 1% of the hospital's total funds, had been contributed to it did not convert the hospital into a public corporation, which is one instituted and operated by the state or an agency of the state. And even though the defendant hospital might be a corporation affected with a public interest (i. e., quasi-public in its functions), it was not, as such, subject to the laws governing public hospitals. Since the defendant hospital was a private institution, the exclusion of physicians from the use of its facilities rested solely within the sound discretion of the managing authorities. A physician might have perfect qualifications on paper, but the managing authorities could still exclude him.

Accordingly, the Supreme Court reversed the order of the lower court and entered judgment for the defendant hospital association. *West Coast Hospital Association v. Hoare, 64 So. (2d) 293 (Fla., 1953).*

Malpractice: Honest Difference of Opinion.—The plaintiff, a seaman, sued his employer, a ship line company, for alleged failure to provide surgical care. From a judgment in favor of the defendant, the plaintiff appealed to the United States court of appeals, third circuit.

On May 4, 1948, the plaintiff was shot and robbed while on shore leave in Venezuela. He was immediately hospitalized and underwent an operation to repair his colon and abdominal wall. The defendant paid for this expense and then had him flown back to the United States. At that time he showed to the defendant a report of the physician in Venezuela that said that originally he (the physician) thought that a second operation would be necessary to reintroduce into the abdominal cavity a part of the plaintiff's colon that had been exteriorized in the first operation, but that this now appeared to be unnecessary since it had come about by natural process. Nevertheless, the plaintiff was operated on for repair of a hernia, which had developed from the wound and the first operation. After dismissal from the hospital, the operational incision continued to drain, and in November the plaintiff noticed a bulging in his abdomen. On Jan. 19, 1949, the plaintiff visited a Dr. Parker on the defendant's suggestion. Dr. Parker found a definite bulging and protruding area between the original midline incision and the general colostomy location. He reported his finding to the defendant but did not recommend that the plaintiff submit to a third operation. At the trial the plaintiff contended that this failure to urge another correctional operation was negligence, which caused the plaintiff unnecessary suffering and expense. To support this contention, a medical witness testified that he had examined the plaintiff in May, 1951; that the plaintiff was then suffering from a ventral hernia; that Dr. Parker's report in 1949 indicated that the plaintiff had had the same hernia then; and that the plaintiff should have been advised then to have it repaired by surgery.

On appeal the court of appeals held that, even assuming that the defendant had a duty to furnish necessary medical and surgical care for injuries caused by the gunshot wound, the plaintiff failed to prove that the defendant had negligently failed to provide such services. The testimony of the plaintiff's witness merely indicated that the witness differed in opinion with Dr. Parker. No evidence was introduced to show that Dr. Parker did not use the degree of medical skill, care, and competence ordinarily exercised by members of his profession in that community. The mere fact that two physicians differ in their opinion as to the proper treatment in a given case is not evidence that one is acting negligently.

Accordingly, the judgment in favor of the employer was affirmed. *Graham v. Alcoa S. S. Co., Inc., 201 F. (2d) 423 (U. S., 1953).*

Drugs: Sale by Persons Not Licensed Pharmacists.—The defendant was convicted of the statutory crime of unlawfully selling certain drugs. On appeal to the circuit court the defendant's motion to quash the complaint was granted. The state therefore appealed to the Supreme Court of Wisconsin.

A Wisconsin statute prohibits anyone not a registered pharmacist or a registered assistant pharmacist from selling drugs, excepting proprietary medicines. The term drugs is defined as consisting of all compounds recognized by the United States Pharmacopeia, the National Formulary, and the Homeopathic Pharmacopeia of the United States as intended for use in the mitigation, diagnosis, cure, treatment, or prevention of disease in man or animals. The defendant, who was not a registered pharmacist or a registered assistant pharmacist, sold aspirin, camphorated oil, and milk of magnesia, all three of which are listed as drugs by one or more of the agencies mentioned in the statute.

The defendant first contended that the three articles that he sold were proprietary medicines. After reviewing decisions of other courts and jurisdictions, the Supreme Court adopted the following definition of proprietary medicines: "One made according to the maker's own formula, all or partly secret, named with the name of his own choice, put up in original packages bearing his name as well as the name of the medicine and directions for the use of the same." The key factor in this definition is that the formula is generally secret, known only to the maker. Since none of the compositions that the defendant sold were made according to a secret formula, the court held that they were not proprietary medicines and therefore were not exempt from the statute. The defendant next argued that the statute represented an unconstitutional delegation of legislative power to private agencies. The court admitted that the legislature could not delegate its lawmaking power but said that it can enact laws the application of which depend on determinations of fact by private agencies. In the opinion of the court this was the extent of the power held by the three national agencies under the statute.

Accordingly, the Supreme Court ordered the criminal prosecution to be reinstated in the circuit court. *State v. Wakeen, 57 N. W. (2d) 364 (Wis., 1953).*

MEDICAL LITERATURE ABSTRACTS

INTERNAL MEDICINE

The Anti-Thyroid Action of Para-Aminosalicylic Acid. A. G. Macgregor and A. R. Somner. Lancet **2**:931-936 (Nov. 6) 1954 [London, England].

It has been known for some years that many aminophenol compounds have a goitrogenic action. Astwood showed in 1943 that *p*-aminobenzoic acid inhibited thyroid gland function in rats. The closely related substance *p*-aminosalicylic acid (4-amino-2-hydroxybenzoic acid) and its sodium salt have been extensively used in the treatment of tuberculosis. Macgregor and Somner cite observations by others that make it apparent that *p*-aminosalicylic acid can in some circumstances, when used in normal dosage in the treatment of tuberculosis in man, produce clinical hypothyroidism. They tried to assess the true incidence of goiter and hypothyroidism in a fairly large group of patients under treatment with *p*-aminosalicylic acid, and the thyroid function of tuberculous patients receiving *p*-aminosalicylic acid for prolonged periods was studied clinically and with the use of radioactive iodine. They found that of 83 tuberculous patients treated with sodium *p*-aminosalicylate for five months or more, a goiter developed in 20, often with hypothyroidism, an incidence of 23%; nine additional cases were seen in other hospitals. Studies with radioactive iodine showed changes in thyroid function in all the patients tested while receiving *p*-aminosalicylic acid. Many patients showed a hypothyroid pattern of radioiodine excretion, and in all of them but one avidity of the thyroid gland for radioiodine was observed on withdrawal of *p*-aminosalicylic acid. Previously untreated patients showed a depression of thyroid function under treatment with *p*-aminosalicylic acid. Although the goitrous and hypothyroid state induced by *p*-aminosalicylic acid is usually quickly reversible on withdrawal of the drug, the authors feel that thyroxine should be given to all patients in whom a goiter is noted or to whom *p*-aminosalicylic acid is to be given for more than six months. Observations on one patient suggested that irreversible changes might be induced by prolonged use of *p*-aminosalicylic acid, and the histological appearances of the thyroid gland of a patient who had received more than 10 kg. of *p*-aminosalicylic acid were those of extreme degeneration and disorganization.

Study of Phosphaturia Induced by Calcium Infusion: New Test of Parathyroid Function. L. Justin-Besançon, H.-P. Klotz, P. Barbier and others. Ann. endocrinol. **15**:405-424 (No. 4) 1954 (In French) [Paris, France].

The authors report the effects on phosphaturia of an infusion of 3.3 gm. of calcium chloride in 500 cc. of isotonic glucose solution. In control subjects a diuresis greater than 500 cc. in 3 hours was noted, together with a decreasing hourly phosphaturia leading to a 24-hour phosphaturia that was definitely lower than that before infusion and that of the first 24 hours after infusion, though often the latter is higher than the initial phosphaturia. In the patient with postoperative or idiopathic hypoparathyroidism who has not received treatment, there is a decreased diuretic response and a frank hyperphosphaturic response, both in the hourly and 24-hour specimens. There is no abnormal elevation of phosphaturia in the 24 hours after infusion. In patients with hypoparathyroidism who were treated, these responses are attenuated or even reversed. In spasmophilia (idiopathic normocalcemic tetany) and the so-called endocrine cataracts there is no definite disturbance of the diuretic response and the 24-hour phosphaturia. On the other hand, the hourly hypophosphaturia response is modified: It is established slowly and progressively in spasmophilia and is retarded in the cataracts after a phase of complete absence during which there is transient hyperphosphaturia.

Diffuse Interstitial Fibrosis of Lungs (Hamman-Rich's Syndrome). P. Dias da Costa and E. T. Torres. Rev. Assoc. med. brasil. **1**:166-172 (June) 1954 (In Portuguese) [Rio de Janeiro, Brazil].

Diffuse interstitial fibrosis of the lungs is a rare condition. The disease is more frequent in persons between 40 and 50 years of age than in younger or older persons. The symptoms are acute, uncontrollable cough, clubbed fingers and toes, acute dyspnea, and acute cyanosis that do not respond to any treatment. The disease follows a rapid course to a fatal end. There is a discrepancy between the apparently benign objective and roentgen signs and the acute clinical symptoms and rapid course of the disease. In the early stage the roentgenograms of the lungs and the electrocardiogram are normal. In more advanced stages the roentgenograms of the lungs show unilateral or bilateral infiltration, miliary shadows, or pulmonary condensation. The changes of the electrocardiogram correspond to those of chronic cor pulmonale. In late stages the right ventricle, previously hypertrophic, suffers dilatation and cardiac insufficiency occurs. The short-term prolongation of the patient's life depends on his continuous breathing of oxygen. The disease is of unknown origin. It is believed that an unknown virus elicits rapid progressive proliferation of the interstitial tissues of the lung, with consequent diffuse fibrosis that involves the interalveolar septums, the pulmonary arterioles, the capillaries, the small bronchi, and the bronchioles. Intra-alveolar proliferating hyaline membranes are formed, the alveolar structures are thickened, and a fibrous alveolocapillary blockage, preventing arterialization of blood, is formed. Hypertension of the pulmonary circulation and aggravation of the bronchopulmonary-cardiac disorders cause insufficiency of respiration and cardiac failure. The patient dies in complete cyanosis and acute dyspnea. The treatment is symptomatic. It consists of antibiotics, heart tonics, vitamins, sulfonamides, oxygen, and rest. Corticotropin (ACTH) and cortisone are interdicted. The typical case reported by the authors is the 25th in the literature and the first published in Brazil. The patient presented early symptoms of hypermetabolism simulating hyperthyroidism. The duration of the disease, including the latent period was 2.5 years. The acute stage lasted 2.5 months.

Prognosis of Diabetes Mellitus. G. R. Constam, P. Hochstrasser and F. von Sinner. Schweiz. med. Wchnschr. **84**:1233-1239 (Oct. 30) 1954 (In German) [Basel, Switzerland].

Constam and co-workers agree with Joslin that the average life expectancy of patients with diabetes mellitus has been considerably prolonged since the introduction of insulin and modern drugs counteracting infection and improving circulation. The mortality rate of diabetes mellitus, nevertheless, is rising. The mortality rate of patients of advanced age has increased, while that of the younger patients has decreased. The short-term prognosis of diabetes mellitus has become favorable since the introduction of insulin. The diabetic coma, which once was the most frequent cause of death, can now be prevented in most patients. Vascular changes today are the main cause of death; they develop after 8 to 20 years' duration of the metabolic disturbance. The Danish worker Lundbaek coined for them the term "late diabetic syndrome." It is this syndrome that renders the long-

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The place of publication of the periodicals appears in brackets preceding each abstract.

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term prognosis of diabetes mellitus unfavorable. Of 103 diabetic patients who were examined at the consultation office for diabetic patients of the medical polyclinic of the university in Zurich, Switzerland, only one-fifth were free from late symptoms after 20 years' duration of their metabolic disturbance, one-fifth showed few vascular changes, and three-fifths showed many vascular changes. It is the age of the patient and the quality of the treatment, rather than the degree of the disease and the type of insulin used, that influence the fate of the diabetic patient. Of 28 diabetic patients who acquired diabetes mellitus before the age of 30 years, 15 did not show any late symptoms after 20 years' duration of the metabolic disturbance; 3 showed only few late symptoms; while of 75 diabetic patients of more advanced age, 52 showed many late lesions. Of 21 diabetic patients in whom the disease always was well controlled, only one had many vascular lesions; 9 had few vascular lesions; and 11 were free from such lesions; while of 32 patients whose disease never was well controlled, only 2 did not have any late symptoms, and only 2 others had only few late symptoms. There were only 4 of 117 diabetic patients who were examined after 20 or more years' duration of their metabolic disturbance whose diabetes mellitus remained compensated for several decades with few dietary restrictions and in whom vascular changes occurred only very late. Cases of this exceptionally mild type are rare, and it must be emphasized that most of the patients even with mild diabetes mellitus showed many late symptoms after 20 years' duration of the metabolic disturbance. Early and adequate treatment offers the best prospect for the prevention of late symptoms or for delaying their occurrence for many years and slowing down their course. It must be the aim, beginning with the first treatment of diabetes mellitus, to prevent the late diabetic syndrome. A cure of diabetes mellitus cannot be achieved, but its prognosis may be favorably influenced.

Resistance to Insulin Resulting from Excessive Doses of Insulin: Its Treatment with Thiouracil Compounds. C. Brentano. Ztschr. klin. Med. **152**:371-390 (No. 5) 1954 (In German) [Berlin, Germany].

Brentano points out that the changing picture of diabetes mellitus is not completely determined by the island apparatus of the pancreas but that extrainsular factors also play a part. He is concerned with those patients in whom resistance to insulin develops as a sequel of chronic excessive insulin dosage. Without changing the diet and without recognizable causes, glycosuria sometimes increases, and the physician increases the insulin dosage. Instead of responding to the higher insulin doses the metabolic condition becomes constantly more unfavorable. In some cases, the carbohydrates of the diet are not at all used, but are almost completely excreted in the urine. This was the case in the 68-year-old man whose case is cited by the author. However, although the glycosuria indicates a resistance to insulin, the blood sugar does not necessarily reveal this same resistance. On the contrary, an increased sensitivity to insulin may become evident in the blood sugar values, and severe hypoglycemic reactions are likely. This also was observed in the case reviewed. The author mentions experiments on rabbits in which intoxication produced by the administration of thyroxin was followed by resistance to insulin. In human subjects likewise excessive thyroid function has been known to increase the severity of diabetes mellitus. The resistance to insulin is produced not only by excessive functioning of the thyroid, but the adrenal cortical as well as other functions may likewise be involved. Insulin resistance after excessive insulin dosage represents a counter regulation. The typical picture of hyperthyroidism, or of the adrenogenital syndrome, or of Cushing's disease, however, does not necessarily develop. The author found that the administration of thiouracil preparations, particularly of phenylthiouracil, is quite effective in cases in which insulin resistance has resulted from excessive insulin dosage. The administration of thiouracil preparations normalizes the response to insulin in a relatively short time.

The Significance of Hemolytic Streptococcus of Group A, Type 12, in the Development of Acute Glomerulonephritis. E. Reubi and H. Löffler. Schweiz. med. Wchnschr. **84**:1239-1243 (Oct. 30) 1954 (In French) [Basel, Switzerland].

Bacteriological examination of pharyngeal and tonsillar swabs obtained from 14 patients who were suspected of having acute nephritis was carried out within a few hours after the patients' admission to the medical clinic of the University of Bern, Switzerland. Four patients had acute glomerulonephritis of the classic type, two focal nephritis, two nephrotic syndrome, two pyelonephritis, two juvenile hypertension, one febrile albuminuria, and one massive albuminuria of doubtful origin. The serologic identification of group A streptococci was performed by both the agglutination technique according to Griffith and the precipitin method according to Swift, Wilson, and Lancefield. Hemolytic streptococci of group A, type 12 were identified only in the four patients who had the classic aspect of acute glomerulonephritis with edema, hypertension, albuminuria, and hematuria. Streptococci of this type were not present in the pharynx of the 10 patients with the other types of nephropathies, from whom one strain of group A, type 6 hemolytic streptococci, hemolytic streptococci not belonging to group A, and a variety of not systematically differentiated bacterial strains were isolated. These results are in accord with the observations of Rammelkamp and co-workers and Wertheim and associates in the United States that the pharyngeal infection with hemolytic streptococci group A, type 12 is frequently followed by an acute glomerulonephritis associated with edema and hypertension in patients in whom this pathogenic agent causes a renal complication. This nephritogenic strain, therefore, is not limited geographically to certain towns of the United States but has spread likewise to Switzerland.

Tularemia. L. Libbrecht. Belg. tijdschr. geneesk. **10**:937-944 (Oct. 1) 1954 (In Flemish) [Leuven, Belgium].

Libbrecht points out that although tularemia has long been known to occur in the United States, in Russia, in eastern Europe and in Japan; but it has been observed only relatively recently in western Europe. It seems to have been introduced into France with the hares that were imported after the last world war to replenish the loss of wild life. From France the disease spread northward into Belgium. The author presents histories of two patients with tularemia whom he observed recently. The first patient, a game warden, had the cutaneoglandular form, which resulted from a contusion on the hand that he sustained while freeing a hare from a trap. Abdominal symptoms predominated in the second patient with tularemia. The eating of an inadequately prepared hare-pie seemed to have been the cause of the illness, which appeared after an incubation period of eight days. Treatment with chlortetracycline (Aureomycin) proved effective in both cases of tularemia. The causation and multiform symptoms of tularemia are discussed. There may be involvement of the skin, conjunctivas, mouth, and lymph nodes and of the respiratory, digestive, and nervous systems.

Intramuscular Iron Therapy in Iron-Deficiency Anaemia. I. M. Baird and D. A. Podmore. Lancet **2**:942-946 (Nov. 6) 1954 [London, England].

Patients who are intolerant of orally administered iron usually respond well to intravenously injected iron, but this involves the danger of reactions either early, owing to allergy, or late, owing to intravascular precipitations of the administered iron. Baird and Podmore are concerned with the intramuscular injection of a dextran-iron solution, for which the following advantages have been claimed. 1. It is about a third as toxic as iron saccharate solution to mice. 2. It is more stable than iron saccharate both in vitro and in vivo. 3. It does not precipitate in plasma over a wide pH range. 4. It has a pH of 6.0 to 7.0, is isotonic with tissue fluids, and contains the equivalent of 5% of iron. Tolerance experiments on 10 volunteers were satisfactory, except for discomfort lasting up to 12 hours and staining of the skin when an ordinary intramuscular needle was used. Forty patients with iron-deficiency anemia were selected for treatment. The iron was absorbed from the intramuscular site.

After a single intramuscular injection of 4 or 5 ml. of the iron solution, serum iron levels attained a variable peak in one or two days and returned to about normal after six or seven days in both anemic patients and healthy persons. There was no evidence of increased urinary excretion of iron after injection of the preparation. The injected iron disappears from the serum more slowly than does saccharated iron oxide. In spite of serum iron levels as high as 13.8 mg. per 100 ml. no toxic reactions were observed after intramuscular injections. Thirty-eight out of 40 patients with iron-deficiency anemia responded adequately to intramuscular treatment with the iron preparation. It was found that 43 mg. of iron given intramuscularly would raise the level by 1%, and the period taken to achieve the maximum rise in hemoglobin was four to nine weeks.

Disappearing Bones—A Rare Form of Massive Osteolysis: Report of Two Cases, One with Autopsy Findings. L. W. Gorham, A. W. Wright, H. H. Schulz and F. C. Maxon Jr. Am. J. Med. **17**:674-682 (Nov.) 1954 [New York].

The authors have seen two patients with an unusual form of massive osteolysis characterized by more or less complete disappearance of bone material; these are described and 16 cases from the literature are summarized. The disease occurs generally in children or young adults, only 4 of the 18 patients being over 21 years old, and affects the sexes in about equal measure. There was a history of trauma in 15, but this appears to be nonessential. The disease is not limited to any one bone but may affect a number of bones, notably the clavicle, scapula, ribs, sternum, humerus, radius, ulna, jaw, bones of the hands or feet, femur, and pelvis. The slow disintegration works on both the cortical and cancellous elements of bone, progresses slowly, and usually continues until practically all osseous tissue is gone, leaving only a fibrous band, presumably the periosteum, as a residuum. In some instances, the process stabilizes itself before this last stage is reached. The most striking pathological condition in all cases in which biopsy specimens have been studied is a vascular abnormality of some kind, chiefly an overgrowth of small thin-walled vessels, especially blood vessels. The process does not seem to be a neoplastic one, but it is thought that this form of active hyperemia disturbs the balance of osteoblast-osteoclast activity, resulting in an excess of bone destruction. Diffuse inflammation of the soft tissues around the affected bones might play an indirect part in causing bone atrophy by irritation or compression of peripheral nerves, leading to trophic disturbances not only in bone but in other tissues as well. The process led inexorably to death in one of the two patients seen personally by the authors. Two of the patients reported in the literature have died, the bony lesions seemingly having nothing to do with these deaths.

Potassium-Losing Nephritis Presenting as a Case of Periodic Paralysis. B. M. Evans and M. D. Milne. Brit. M. J. **2**:1067-1071 (Nov. 6) 1954 [London, England].

A 41-year-old Negro woman from Nigeria had chronic pyelonephritis in which urinary potassium loss caused episodes of hypokalemic paralysis. In between her attacks of paralysis, which lasted for from 2 to 20 days, she suffered some muscular weakness. It was estimated by balance data that there was a deficiency of about 1,500 mEq. of potassium, amounting to 40% of the total normal body potassium. The patient obtained reasonably good benefit from potassium replacement therapy; in a four month follow-up period there were no attacks of frank paralysis, but there was some muscular weakness, and the potassium supplements had to be increased at intervals. The differential diagnosis of potassium-losing nephritis from true familial periodic paralysis can be made from the following five points: (1) lack of family history, (2) late age of onset, (3) hypokalemia and muscular weakness persisting between attacks of paralysis, (4) longer duration and greater severity of attacks, and (5) clear evidence of organic renal disease. Larger potassium supplements may be necessary in the nephritic cases, and the prognosis is worse than in cases of the familial disease.

SURGERY

Results of the Stripping Operation in the Treatment of Varicose Veins. T. T. Myers and L. R. Smith. Proc. Staff Meet., Mayo Clin. **29**:583-590 (Nov. 10) 1954 [Rochester, Minn.]

In this evaluation of the stripping operation for varicose veins Myers and Smith considered only patients seen and reexamined at least 12 months after operation. This includes 1,189 of the 2,660 stripping operations that were performed at the Mayo Clinic in the five years from 1947 to 1951, inclusive. These 1,189 operations were performed on 711 patients, in whom the average length of follow-up after operation was 25.1 months, the longest 62 months. The results of two types of surgical procedures performed by the same surgeons on varicose veins were compared. One procedure was an incomplete stripping operation; it consisted of stripping the vein just to the knee with simultaneous injection of sclerosing solution into the remaining distal segment. The other procedure was a complete radical stripping and dissection of all possible varicosities from the dorsum of the foot to the groin. Results of the incomplete operation or stripping of the great saphenous vein just to the knee showed a 12.1% recurrence with 57.8% of the extremities showing little or no collateral venous formation in the over-all results and a 19.3% recurrence with 49.1% of the extremities showing little or no collateral venous formation in the group followed more than 2.5 years. This compares with an 0.6% recurrence with the radical procedure and 94.4% of extremities showing little or no collateral formation in the over-all results and 2.0% recurrence and 9.5% of extremities showing little or no collateral formation in the group of patients followed more than 2.5 years. The average amount of sclerosing fluid injected in the group of extremities stripped to the knee was 9.4 cc. immediately after operation and 4.8 cc. at the follow-up examination. This compares with 3.8 cc. immediately after operation and 1.6 cc. at the follow-up in the group for the extremities on which the radical procedure was carried out. Complications were negligible. The results indicate that the radical stripping and dissection technique is the procedure of choice. The patient submits to a longer anesthesia and a more radical operation but has no more, if as much, postoperative morbidity, and is saved the greater chance of recurrence with its continued symptoms, skin changes, reoperations, and painful repeated injection. Similar results were found in the cases in which deep venous insufficiency was associated. The radical procedure again produced the best and most consistent results both in the varicose veins and in the stasis changes.

Cervical Rib: Diagnosis and Treatment. G. F. Cottini and C. F. Abente. Rev. Asoc. med. argent. **68**:326-330 (July 15-30) 1954 (In Spanish) [Buenos Aires, Argentina].

Observations were made on nine patients with the painful shoulder syndrome caused by a cervical rib. It has been observed in the Servicio de Cirugía of the Policlínico Alvear of Buenos Aires that a cervical rib can cause the painful shoulder syndrome only when it is 5 or 6 cm. long, so as to reach the blood vessels and nerve roots of the arm in the supraclavicular region and exert pressure on those structures. The rib can be palpated in the supraclavicular region as a painless hard tumor of regular surface. Cervical ribs with distal ends can be depressed under the finger as a "key in the piano." Pain due to pressure of the rib on the roots of the brachial plexus extends down the arm and the forearm along the external aspect of the arm. At the level of the tumor structure some arteries, in "ectasic arteritis," pulsate with the pulse, with a thrill simulating an aneurysm. The peripheral vascular symptoms consist of local syncope and local tissue asphyxia of various degrees. In advanced cases acute distal lesions and distal gangrene may occur. Diez's diagnostic maneuver for cervical rib consists in the aggravation of pain and of the local symptoms when the arm is raised. Arterial pulsation and oscillometry diminish or disappear during the maneuver. A clinical diagnosis of cervical rib calls for roentgen examination to ascertain the length and, from it, its causal role in the painful shoulder syndrome. Treatment consists of periosteal resection of the rib and anterior scalenectomy. General anesthesia with intubation, to prevent traumatic pneumothorax, is used. Cure was obtained in all cases.

OPHTHALMOLOGY

Etiology of Retrolental Fibroplasia. W. A. Manschot. A. M. A. Arch. Ophth. **52**:833-846 (Dec.) 1954 [Chicago].

In order to ascertain the anatomic aspects of the earliest stage of retrolental fibroplasia Manschot began in 1951 to study the eyes of premature infants. A total of 114 eyes of 59 infants were studied. The first stages of retrolental fibroplasia were found in the eyes of three children. The clinical histories of these three infants illustrate that it is necessary to consider the whole infant, and not its eyes or its incubator only, in order to obtain an insight into the cause of retrolental fibroplasia. The birth weights were lower than 1,500 gm., and the ages were between 2 and 2.5 months. As all three children were treated for more than one week with oxygen, they probably would have been recorded in many statistics as cases of retrolental fibroplasia related to a prolonged administration of oxygen. Careful reading of the medical histories, however, reveals these facts: 1. The first infant received 8 liters a minute for four days; thereafter, during the last three weeks of life, the oxygen administration was cut down by one-half. The history of the patient in case 2 does not mention the exact amount of oxygen given; however, on the 16th day before death the child did not do well without oxygen. The third infant received very little oxygen; the flow had constantly been kept below 2 liters a minute, except for the first few hours on the 67th day. 2. All three children were cyanotic and dyspneic and had severe anemia during the last weeks before death. 3. Anatomic examination of the eyes revealed the earliest stages of retrolental fibroplasia, which could have existed only a short time. It seems certain that these three infants had been hypoxic, instead of hyperoxic, during the last period of their lives, in which the first stage of retrolental fibroplasia had developed. The lungs of these three infants showed an advanced stage of the interstitial plasma cell pneumonia of premature infants. The author feels that this interstitial plasma cell pneumonia probably is a causative factor in a considerable number of cases of retrolental fibroplasia. It is a "new" disease, as is retrolental fibroplasia, and it also occurs predominantly in premature infants. This pulmonary disease is believed to be caused by Pneumocystis carinii. It is considered plausible that the epidemic incidence of retrolental fibroplasia is due to the epidemic occurrence of interstitial pneumonia of premature infants. The organism "causing" retrolental fibroplasia in these epidemic cases is not present in the eyes but is found in the lungs. It causes a severe hypoxia, which is the stimulus for the development of the retinal capillary proliferation that is the earliest pathological process in retrolental fibroplasia. The fact that in some clinics more than 50% of all premature babies with a birth weight below 1,500 gm. have interstitial plasma cell pneumonia suggests that many infants with retrolental fibroplasia have suffered from this pulmonary disease.

Quinine Amblyopia. S. F. Sun and L. F. Ley. Chinese M. J. **72**:319-324 (July-Aug.) 1954 [Peking, China].

The case reported concerned a 51-year-old native of Canton, China, who had worked in a rubber plantation in Indonesia and had had malaria for 10 years. He often took quinine for preventive and curative purposes, and, in 1952, while still in Indonesia, he once took by mistake 132 quinine pills (39.6 gm.), while he suffered from headache and dizziness. A few hours later, he vomited and became comatose, and two days later he was totally blind with numbness of the limbs. After 23 days he could walk with difficulty, and after 28 days his eyes had light perception. Gradually he could see bigger letters under good light, but during several months of hospitalization in Indonesia and after repatriation to China his vision showed no further improvement. The authors describe the visual status and the results of fundus, physical, and laboratory examinations when the patient came under their care. They instituted treatment with vitamin B complex and nicotinic acid, but no changes resulted in either the fundi or the visual fields. The authors cite reports from the literature that indicate that quinine amblyopia or amaurosis is comparatively rare. It apparently develops more easily in children, and their vision is also less readily restored. The pathogenesis of quinine amblyopia is discussed. The authors feel that in their patient amblyopia resulted from the large quantity of quinine taken. However, it has been known to result from a single hypodermic injection of an ordinary dose of quinine. Individual idiosyncrasy seems to be responsible in such cases. As soon as symptoms of quinine amblyopia appear, the use of quinine should be immediately stopped. The administration of a vasodilator, such as sodium nitrite given intravenously, acetylcholine or atropine sulphate given retrobulbarly, or papaverine given orally, is indicated. Vitamin B complex, potassium iodide, and nicotinic acid are also helpful. Some clinicians prefer surgical intervention, that is, anterior chamber puncture or lumbar puncture as an adjuvant measure.

THERAPEUTICS

Cortisone in Black Widow Spider Bite. J. M. Goudy and H. A. Masters. J. Oklahoma M. A. **47**:309-310 (Nov.) 1954 [Oklahoma City].

While studying the use of cortisone in the treatment of venomous snake bites, Goudy and Masters received numerous inquiries about its effectiveness in black widow spider bites. They describe its use in two such cases in which they achieved good results. The third patient presented had been bitten by a brown and hairy spider, definitely not a black widow spider. This patient was given 5 mg. of cortisone on the third day. Because of the fever and local infection, streptomycin was also given. While no definite results from cortisone could be demonstrated, the patient felt that it helped and requested another injection on the following day. Ulceration of the lip progressed, and on the fifth day a blister developed on the mucosa beneath the external wound. The mucosal lesion became much larger than the external ulcer. The patient made an uneventful recovery and was released on the eighth hospital day. All edema had subsided and the external wound was completely healed, although slight mucosal ulceration persisted. The question arises as to the role of cortisone in this tissue breakdown. This type of reaction commonly follows the bite of nonpoisonous spiders, and the authors do not feel that the cortisone was responsible. They have employed cortisone in much higher dosage after surgery with no evidence of impairment of healing. Corticotropin is available in a form that can be given intravenously for more rapid action. This preparation would probably be more useful for the acute pain and abdominal cramping resulting from black widow spider bites. The authors call attention to the fact that the symptoms of black widow spider bites may closely mimic acute surgical conditions of the abdomen, and unnecessary operations may be performed if this fact is not remembered.

Ammonium Camphosulphonate Combined with Quinine Bromhydrate in Test of Cardiovascular Function. G. C. Ricci and I. Billeri. Gazz. med. ital. **113**:242-249 (Aug.) 1954 (In Italian) [Milan, Italy].

Pharmacological and clinical experience has indicated that "Cardiochin," a combination of ammonium camphosulphonate with quinine bromhydrate, is a useful drug with an analeptic, myocardiotonic, and bathmotropic action. The hypertensive and bradycardic effect obtained with this drug in patients with hypotension or normal arterial pressure is generally much like that of Veritol (*p*-[2-methylaminopropyl] phenol). The authors made a comparative study of these two agents in four patients with hypotension and in four with normal arterial pressure to whom both drugs were given. The average increase in the blood pressure of normotensive patients was greater after the administration of Veritol (17/11 mm. Hg) than after that of Cardiochin (11/9 mm. Hg). The increased arterial pressure induced by the

latter, however, lasted longer than that brought about by Veritol (an average of 32 minutes as against 28 minutes). Bradycardia also lasted longer when it was induced by Cardiochin than when it was caused by Veritol. The results in the four patients with hypotension paralleled these; the bradycardia induced by Cardiochin continued in these patients for 55 minutes as compared with 43 minutes when it was induced by Veritol. The results obtained in 11 patients with normal or low blood pressure who were given only Cardiochin paralleled those obtained in the first two groups. The authors conclude that Cardiochin is an excellent adjuvant in all forms and manifestations of vascular hypotonia for which a prolonged treatment is required. It is also a good emergency drug in cardiovascular collapse, especially when this occurs during the course of acute infectious diseases.

Vitamin A in Treatment of Oligozoospermia. J. K. Kar and R. M. Kapadia. Indian J. M. Sc. 8:625-630 (Sept.) 1954 [Bombay, India].

It is being increasingly recognized that the male factor is as important as the female factor in the problem of infertility. This report is concerned with the effects of vitamin A in 24 male patients attending the clinic for sterility. Twenty-two of these patients had oligozoospermia and 2 had a normal number of spermatozoa in the semen. After genital abnormalities and systemic disease had been ruled out, the semen was analyzed after abstinence of at least five days. The sperm count abnormality and motility investigations were carried out before and during the treatment with vitamin A. Two patients with normal sperm count were given vitamin A (99,000 units) by mouth for 10 days. One of these showed a marked rise in the sperm count while the other showed a negligible change. Of the 22 oligospermic men, 3 of the earlier ones who were given high doses showed a marked depression in the sperm count; 2 of them became nearly azoospermic. In spite of the massive vitamin A therapy (200,000 to 300,000 units daily) no toxic systemic effects were observed. The depression in sperm count was temporary, and the count rose steadily after withdrawal of the drug. Of the remaining 19 patients with oligozoospermia, 16 showed striking improvement in the sperm picture and 3 remained static. In addition to an increase in the sperm density, there was a diminution in the number of abnormal forms in 11 cases and an improvement in the sperm motility in 10 cases. In view of the encouraging results obtained, vitamin A is recommended in the therapy of oligozoospermia.

Accident During Treatment of Ankylosing Spondylarthritis with Phenylbutazone. R. Simonin and J. Fau. Presse méd. 62:1518 (Nov. 6) 1954 (In French) [Paris, France].

A 56-year-old man had advanced ankylosing spondylarthritis. Treatment with phenylbutazone caused marked weakness, diarrhea, and a disinclination to adhere to low-sodium diet at the end of one week of therapy, but some improvement in the patient's disease was noted. Eighteen days after the treatment was discontinued because of this reaction it was started again, but it was stopped after two more days because of another attack of diarrhea with intense pruritus. There was marked leukocytosis. Irreversible adrenal failure developed 24 hours after the cessation of drug therapy, leading to death within 10 hours in spite of replacement therapy and temporary improvement. Autopsy showed massive hemorrhage of both adrenals, the left gland being entirely destroyed and replaced by a blood clot. Histologically, there was atrophy of the adrenal medulla. Hepatitis with steatosis was present, together with atrophic gastritis. The authors consider that this case of adrenal hemorrhage was neither coincidental nor of infectious origin but was definitely caused by phenylbutazone. This is the first such case to be reported in the literature. It is suggested that routine treatment with cortisone be instituted in patients receiving phenylbutazone therapy as soon as warning symptoms—weakness, diarrhea, pruritus, or leukocytosis—appear, not when the characteristic picture of adrenal failure is seen, since it may then be too late. Massive doses of hormone, saline and glucose solutions, and plasma should be used in order to insure adequate replacement.

PATHOLOGY

Pulmonary Tuberculosis and Bronchogenic Cancer. R. Desmeules, P.-E. Gardeau and P. Richard. Laval méd. 19:1200-1216 (Nov.) 1954 (In French) [Quebec, Canada].

Among 329 autopsies performed during a 10 year period at the Hôpital Laval, Quebec, Canada, only two cases of pulmonary tuberculosis associated with bronchogenic carcinoma were found. This is an incidence rate of only 0.6%. The authors saw three patients with pulmonary tuberculosis and malpighian epithelioma. One of these tumors was located to the right, one to the left, and one bilaterally. In one patient the tuberculosis definitely preceded the neoplasm, in the second the reverse was true, and in the third it was impossible to tell which of the two processes came first. The authors do not share the opinion of other workers that there is a natural antagonism between the two diseases, but they think that there are different predispositions to them. Tuberculosis appearing in a person with cancer is simply the reactivation of latent disease or is the result of dissolution of old foci of tuberculosis with resultant liberation of encapsulated bacilli. The authors note that their figure for the frequency of the association between pulmonary tuberculosis and bronchogenic cancer, namely, 0.6%, is less than the statistically probable ones cited by Lubarsch, that is, 20.6% of cancer patients becoming tuberculous and 4.4% of patients with tuberculosis acquiring cancer. This leads them to conclude that the diathesis that leads to pulmonary tuberculosis does not often lead to bronchogenic cancer.

Effect of Standard Water Purification Processes on the Removal of Histoplasma Capsulatum from Water. D. F. Metzler, C. Ritter and R. L. Culp. Am. J. Pub. Health 44:1305-1313 (Oct.) 1954 [Albany, N. Y.].

The isolation of the fungus Histoplasma capsulatum from soils, animals, and air suggests that it may also be present in water. This possibility is supported by the observation in the laboratory that H. capsulatum will survive for long periods of time and probably multiply in water and by the microscopic demonstration of tuberculate spores from streams and wells. This poses the problem of H. capsulatum in water sources and the relation of water supplies to histoplasmosis. In the eastern section of Kansas, which shows the highest histoplasmin sensitivity rate in the state, the majority of the supplies are treated surface water. With the use of the raw and treated water from one such surface supply, laboratory studies were made to determine the effects of standard treatment plant practices on H. capsulatum artificially introduced into water. The processes of coagulation and sedimentation, rapid sand filtration, and chlorination as practiced in treatment plants for surface waters were applied in the laboratory to samples of river water or tap water sterilized and inoculated with the mycelial phase of H. capsulatum. Sedimentation experiments showed that the settling of either natural turbidity in water, or a floc produced by coagulation with alum, concentrated a majority of the spores in the sediment. The model rapid sand filter did not effect a complete removal of either the yeast or the mycelial phase of H. capsulatum suspended in tap water. There was little difference in removal whether 3, 12, 24, or 30 in. of sand was used. Under the conditions of these experiments, more free available chlorine residual was required in water to inactivate H. capsulatum in the mycelial phase than to destroy enteric bacteria or the virus of poliomyelitis under similar conditions. Complete kill of an original inoculum producing about 950 colonies per 0.5 ml. was demonstrated with 0.35 ppm free chlorine at six hours contact or with 1.8 ppm at 60 minutes. Interpolation of experimental results indicated minimum effective contact times at these residuals of four hours and of 35 minutes respectively.

Leiomyoma of the Lung: Report of a Case. W. F. Pierce, R. L. Alznauer and C. Rolle Jr. A. M. A. Arch. Path. **58:**443-448 (Nov.) 1954 [Chicago].

Pierce and associates present the history of a patient with a primary benign leiomyoma of the lung. The patient was asymptomatic, and the lesion was discovered in a routine roentgenogram of the chest. Exploratory thoracotomy was carried out, and a right middle lobectomy was performed. An oval tumor nodule was present in the parenchyma in the central portion of the lobe. Sections revealed a well-differentiated neoplasm that was composed of interlacing whorled bundles of elongated spindle-shaped cells. In some areas these were also arranged in a "herring-bone" pattern. The narrow elongated nuclei were pale and vesicular and showed no pleomorphism or mitotic activity. The pink cytoplasm took up a characteristic brick-red color with Masson's trichrome stain. Hence, the tumor cells were interpreted as myofibrils of smooth muscle type. The diagnosis was benign leiomyoma of the middle lobe of the right lung. Review of the literature revealed five similar cases, as well as nine cases of primary leiomyosarcoma of the lung. The possibility of an extrapulmonary leiomyosarcoma with a histologically "benign"-appearing solitary metastasis to the lung must always be considered and ruled out by thorough examination of all other organ systems. The necessity for thorough histological study of these mesenchymal pulmonary neoplasms by means of special staining techniques is emphasized.

Observations on Autopsy of 300 Patients with Diabetes Mellitus. R. Tobler. Schweiz. med. Wchnschr. **84:**1213-1216 (Oct. 23) 1954 (In German) [Basel, Switzerland].

Of 11,000 persons who died at the various clinics of the University of Zurich, Switzerland, in the course of the last seven and a half years and on whom autopsies were performed, 300 (2.7%) were patients with diabetes mellitus. Death resulted from severe infections in only 32 (10%) of the 300 patients; chemotherapeutic agents and antibiotics were probably responsible for this low incidence. Diabetic coma was the immediate cause of death in 59 patients (20%). Death resulted from uremia in 17 patients (6%), from cardiovascular complications in 145 (48%), and from carcinoma, accidents, and postoperative nondiabetic complications in 47 (16%). Of the 145 patients with cardiovascular complications, 96 were women and 49 were men. Fifty-six of the 145 patients died of cardiac failure. Comparison of weight of heart and body showed a pronounced cardiac hypertrophy in all 145 patients. The anatomicopathological manifestations of the cardiovascular changes occurred in the form of arteriosclerosis and arteriolosclerosis, and the incidence of the latter was 10 times higher than in the nondiabetic autopsy material. The diabetes thus carries the sclerotic changes into the periphery of the vessels. Renal arteriolosclerosis was observed in 94 patients (32%). Of these 94 patients, 69 were women and 25 men. Forty-seven (68%) of the 69 women had glomerulosclerosis and arteriolosclerotic renal changes, but in only 10 (40%) of the 25 men was this the case. This increased tendency of the diabetic women to arteriolosclerotic renal changes and particularly to glomerulosclerotic changes might be related to hormonal influences (menstrual cycle). Glomerulosclerosis is a specific process that is connected with the diabetic disturbance of metabolism and associated with hypertension, but these two factors alone are not sufficient for the production of glomerulosclerosis, since many of the diabetic persons reported on had arteriolosclerotic renal changes and hypertension but not glomerulosclerosis. The problem of the causation of diabetic glomerulosclerosis has not yet been definitely solved.

PHYSIOLOGY

Gastric and Duodenal Secreting Activity in Artificial Hibernation. M. Florena, P. Bazan and A. Rodolico. Minerva med. **45:**729-733 (Sept. 26) 1954 (In Italian) [Turin, Italy].

The authors studied the gastroduodenal secreting cycle in dogs in which artificial hibernation was induced by means of lytic drugs and a cooling process. They studied the gastric secreting activity in five dogs in normal conditions and after the administration of insulin and histamine before, during, and after the induction of artificial hibernation. They found that during artificial hibernation the secretion flow decreases and achlorhydria is present. As soon as the rectal temperature was restored to normal there was a return to the initial values. The administration of insulin and histamine, which determined a definite increase of the secretion flow when administered before and after hypothermia, had no effects when administered during hypothermia. To determine the effects of hypothermia on the duodenal secreting processes, they studied the biliary and pancreatic juices in two groups of dogs. Both secretions were inhibited during artificial hibernation. The biliary juice decreased from a maximum of 40 cc. to a minimum of 25 cc., and its chemical composition was altered. It was more concentrated with a percentage loss of the water content and a decrease of salts and biliary pigments (urobilin and bilirubin). On the basis of the results of earlier studies at the same institute, the authors state that these modifications could not be ascribed to a liver lesion but were caused by the slackened cellular metabolism inherent to the state of artificial hibernation. The diastase and lipase levels of the pancreatic juice also decreased during hibernation. This change is ascribed to the fact that the various neurological factors that influence the pancreatic secretion were suppressed. The authors conclude that blocking of the autonomic nervous system with lytic drugs and a cooling process can, by inhibiting the secretions, influence favorably the gastroduodenal hypersecretion that is sometimes present after interventions on the stomach and especially after gastrojejunostomy.

Physiopathological Study of Bloodless Organism in Controlled General Hypothermia. P. Goffrini, E. Bezzi, M. Carreras and C. De Risio. Minerva chir. **9:**718-731 (Aug. 31) 1954 (In Italian) [Turin, Italy].

When about 50% of the blood volume is lost rapidly death ensues because of hemodynamic imbalances and hypoxia of the nervous centers and the heart. The authors made a comparative experimental study of the behavior of the organism in normal condition and in general controlled hypothermia with respect to a rapid and profuse loss of blood. Hypothermia was induced gradually in 23 dogs by means of a refrigerating apparatus and, to insure perfect sedation during the cooling process and complete neutralization of the sensorivascular reflex reactions, also lytic drugs. Blood was withdrawn rapidly from the femoral and/or carotid artery of these dogs and 12 others which served as controls until the bleeding stopped spontaneously. It continued for from 3 to 10 minutes, and 35 to 67.25% of the total blood was removed, the highest amounts from dogs in which hypothermia was induced. The blood withdrawn was placed in sterilized containers, heparinized, and kept ready to be reinjected arterially and/or intravenously at a time and speed appropriate for each dog. All the controls died within one to six minutes after spontaneous cessation of the bleeding; in all death was caused by irreversible fibrillation of the myocardium; and in no case was the terminal phenomenon reversible by reinjection of part or all of the withdrawn blood. With regard to the dogs in which hypothermia was induced, it was possible to prolong in some the state of severe cerebral impairment for as long as 15 minutes without causing death. The electric activity that had disappeared in these animals reappeared spontaneously as soon as the reinjection of the withdrawn blood was begun. In those in which the loss of blood was protracted for more than 15 minutes after the bleeding stopped spontaneously (25 minutes), the electric activity was not seen again despite the reappearance, which occurred rather late, of cardiorespiratory activity. The main difference in the behavior of these animals and the controls was a delayed onset of fibrillation. The electrocardiograms in this study revealed the importance of acute hemodynamic imbalances and myocardial anoxia in causing death; anoxia of the central nervous system did not seem to be a determining factor. The results showed the usefulness of controlled general hypothermia as an adjuvant in the treatment of severe hemorrhagic conditions.

BOOK REVIEWS

Financing Hospital Care in the United States. Volume I: Factors Affecting the Costs of Hospital Care. Edited by John H. Hayes. Cloth. $4. Pp. 300, with 16 illustrations. Blakiston Company (division of Doubleday & Company, Inc.), 575 Madison Ave., New York 22, 1954.

This is the first of a three volume report by the Commission on Financing of Hospital Care, an independent, nongovernmental agency sponsored by the American Hospital Association "to study the costs of providing adequate hospital services and to determine the best systems of payment for such services." The two year study initiated in November, 1951, was supported by grants from The Blue Cross Commission of the American Hospital Association, Health Information Foundation, John Hancock Mutual Life Insurance Company, W. K. Kellogg Foundation, Michigan Medical Service, Milbank Memorial Fund, National Foundation for Infantile Paralysis, and Rockefeller Foundation. This report is informative, well organized, and readable; has an easily followed format; contains numerous statistical tables, charts, and succinct recommendations; and has an excellent summary. The early chapters are discussions of the increasing complexity, changing character, and community role of hospital care and the growth in facilities and utilization of nonprofit general hospitals since 1935. The factors influencing the rise in operating expenses of nonfederal general hospitals from 439 million dollars in 1935 to 2,718 million dollars in 1952 are analyzed in detail. When this increase is expressed in terms of inflation-adjusted expenditures per admission, the rise is only 20%. The Commission considers that "factors which exerted an upward pressure included (1) increase in the payroll component of expenditures, resulting from conversion to full cash salaries, increase in number of employees, shorter work week, upgrading of staff and associated increase in salary levels, decrease in proportion of relatively skilled and unskilled employees, and scientific and educational advances reflected in an increase in the quantity and quality of professional and technical services. Factors which exerted a downward pressure included (1) decrease in length of patient stay, which amounted to 30% for all nonfederal general hospitals, (2) increase in utilization of facilities, and (3) improvement in managerial efficiency."

An exploratory study to determine factors causing the wide variation in expenditures per patient day "suggest[ed] that differences in costs among hospitals are due primarily to differences in nature, scope, and quality of the services offered . . . at the present time, evaluation of methods for minimizing the costs of effective hospital care must be based primarily upon general considerations and informed opinion. . . . With more detailed data on the quantities of the various types of service provided, it should be possible to determine the effects on hospital costs of many factors such as managerial skill and degree of utilization of personnel and facilities. The essential need is for the development of standardized definitions of departmental activity and for routine procedures for collecting and reporting data." The types of data needed are presented. Of particular interest for physicians' evaluation and study are chapters 7 through 11 and 14. The Commission considers "cooperation among community hospitals to avoid duplication and to coordinate services" essential. "Only by the development of service programs for ambulatory care can the hospital plant, equipment and personnel be utilized most effectively, thereby reducing unit costs to a minimum" and the Commission suggests for expanding ambulatory care in hospitals: "(1) provision of special services for private ambulatory patients; (2) provision of private offices for physicians; (3) organization of a diagnostic clinic; (4) broadening of traditional clinic service; (5) establishment of a group practice unit within the hospital; (6) standardized programs for periodic physical examination; (7) encouraging the establishment of home care program; (8) coordination with nursing and convalescent homes, and similar institutions; (9) encouragement of mechanisms for prepaid out-patient care for ambulatory patients." The following recommendations are made to promote effective use of inpatient services by the medical staff: inclusion of outpatient benefits in prepayment plans, referral of patients to special facilities for the care of chronic illness, convalescence rehabilitation units, or home care programs; preadmission ambulant work-up; study of the costs of hospital care in medical school; internship and residency training and medical staff meetings; "medical-economic audits" of case records; policies to stabilize the average daily census such as maximum interchangeability of beds; scheduling elective admissions and coordination of discharges and admissions; and more effective use of personnel.

In the final chapter the Commission discusses the role of the board of trustees, medical staff, and administrator. The report emphasizes seven specific methods to achieve "the two objectives of controlling costs and of providing comprehensive high quality care" by increasing effective use of hospital services and facilities: "1. Coordination of services among community hospitals whenever possible. 2. Development of expansion of out-patient service through one or several of the wide variety of possible programs. 3. Development of methods for ensuring effective utilization of hospital facilities by the medical staff. 4. Stabilization of the hospital work load by means appropriate for the individual institution. 5. Increased utilization of personnel through fresh approaches to recruitment, training, supervision, work assignment, salary levels, and other work incentives. 6. Development of systematic budget procedures and methods for obtaining statistics on out-patient activity and departmental service in order to permit analyses of costs and planning of expenditure levels in relation to the hospital's service program. 7. Exploration and definition by hospital boards of trustees of the respective roles of trustees, administrators and medical staffs and the extent of their mutual interdependence; development of appropriate mechanisms to promote smooth working relationships for effective care and for control of costs."

The report of the North Carolina Hospital Study Committee is included as an appendix. The recommendations are more specific and are closely related to the problems of North Carolina in which a thorough pilot study was made.

Cystic Fibrosis of the Pancreas in Infants and Children. By Charles D. May, M.D., Professor and Chairman, Department of Pediatrics, State University of Iowa, Iowa City. Publication number 234, American Lecture Series, monograph in American Lectures in Pediatrics. Edited by John A. Anderson, M.D., Professor and Head, Department of Pediatrics, Stanford University School of Medicine, San Francisco. Cloth. $3. Pp. 93, with 16 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, Canada, 1954.

This is a most interesting monograph on a disease that is being recognized with increasing frequency in infants and small children. The importance of this disease is indicated by the fact that it is at least twice as common as diabetes mellitus and that the case fatality rate is high. The author has been interested in this subject for many years and is personally responsible for much of the present knowledge of the disease. The book presents a complete review of the subject and includes a discussion of the underlying pathology and pathological physiology, as well as a thorough description of the clinical features and management. The illustrations are well chosen and adequate. The bibliography is comprehensive. The material has been presented in a most interesting fashion and with unusual clarity. This book should be of greatest interest to pediatricians and others who deal with children and particularly infants; however, it should be of great interest to anyone interested in pathology or physiology.

These book reviews have been prepared by competent authorities but do not represent the opinions of any medical or other organizations unless specifically so stated.

World-Atlas of Epidemic Diseases. Second Part [to be in 4 issues], First Issue. Edited under sponsorship of Heidelberg Akademie der Wissenschaften by Professor Dr. med. Ernst Rodenwaldt, Heidelberg. Assistant Scientific Editor: Privatdozent Dr. med. habil. Helmut J. Jusatz, Heidelberg, in collaboration with Prof. Dr. R. E. Bader, Tübingen, et al. [In German and in English.] Paper, loose-leaf. 57.50 marks per issue. Various pagination, with 10 maps. Falk-Verlag, Burchardstr. 8, Hamburg 1, Germany, [1954].

Two years have elapsed since the publication of part 1 of this atlas based on the work done by German epidemiologists during World War II under the direction of Dr. H. Zeiss of the University of Berlin. This first issue of part 2 consists of unbound pages perforated for later inclusion in a binder. The text for each disease considered is written in both German and English, by a different author for each subject, with a list of references at the end. The text is printed on pages measuring 14.75 by 18.5 in. (37.47 by 46.99 cm.) and each accompanying map is a gate fold measuring 18.5 by about 27 in. (46.99 by 68.58 cm.). The main map is multicolored and shows areas of endemicity, routes of importation, and other important data. This is supplemented on the back by smaller, shaded maps indicating features peculiar to the disease or its control. This issue covers relapsing fever, epidemic myalgia due to the Coxsackie virus, and rabies in Europe; bacterial dysentery, trypanosomiasis, and trachoma in Africa; trypanosomiasis in South and Central America; and the distribution of the population of the United States. Atlases of this sort are of great military importance and also of interest to global epidemiologists and those interested in the national or international control of communicable diseases.

Psychotherapy and Personality Change; Co-Ordinated Research Studies in the Client-Centered Approach. Edited by Carl R. Rogers and Rosalind F. Dymond. Cloth. $6. Pp. 447, with illustrations. University of Chicago Press, 58th St., and Ellis Ave., Chicago 37, 1954.

The 12 contributors to this book practice a type of treatment that consists of saying nothing to a patient, or at most repeating what he says, acting warmly the while. They are properly concerned with showing that such treatment has some effect. To that end they use many currently popular personality tests as well as some they have devised. Chief among the latter is the Q-technique, a sorting of cards that say, e. g., "It is difficult to control my aggression," or "I feel emotionally mature." They give these tests repeatedly to their patients and to a set of controls. Significant changes in the patients are found after treatment, and these are correlated with the personal impressions of the therapists, who check their own evaluations by pretending to be the patients and casting the Q-cards empathically. Doubtless many will take heart at such results. They will feel that if such homeopathic psychiatry has measurable effects, other stronger, "deeper" methods will have correspondingly larger effects.

A Stereoscopic Atlas of Human Anatomy. Section II: Head and Neck. By David L. Bassett, M.D., Associate Professor of Anatomy, Stanford University, Stanford, Calif. Reels 35-44; 45-54; 55-64; 65-74; 75-84; Index. [Together with] Sawyer's View-Master stereo set [and batteries]. Cloth, loose-leaf. $38.50; stereoscope with battery light attachment, $4. Various pagination, with color photographs by Wm. B. Gruber. [Williams & Wilkins Company, Mt. Royal and Guilford Aves., Baltimore 2]; Sawyer's Inc., P. O. Box 490, Portland 7, Ore.; Canadian Camera Specialties, Ltd., Vancouver, B. C., Canada; Camera Store, Hamilton, Bermuda, 1954.

This atlas consists of a set of colored stereoscopic photographs of dissection of the head and neck region, including the osteology of these parts, and five volumes of labeled line drawings based on tracings of the photographs. With the aid of a small viewer unusually clear and realistic pictures are obtained, which cannot be equaled by any two dimensional method. The preparations are from the same subject and in a logical sequence so that there is a good continuity in the photographs showing the various phases of the progressive dissection of head and neck. Great credit must be given to the author for the superior quality of the dissections, which are planned to give a maximum of information. The color photography by Gruber is excellent, and there is no difficulty in identifying the anatomic structures. This publication is a milestone in the pictorial recording of anatomy. It should be of great value to anyone interested in human gross anatomy.

Urology. Volumes I, II, and III. Edited by Meredith Campbell, M.S., M.D., F.A.C.S. With collaboration of fifty-one contributing authorities. Cloth. $60 per set. Pp. 862;1xiv; 863-1665;1xiv; 1667-2356;1xiv, with 1148 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, England, 1954.

This reference book accomplishes its purpose, which is to bring urology comprehensively up to date in a collection of monographs. Most of the monographs are accompanied by a good bibliography. The section on urologic surgery includes a chapter on preoperative and postoperative care. The medical aspect of urology, somewhat neglected in recent years, is discussed in the sections on urologic diagnosis, endocrinology, and medical diseases of the kidney. Excellent discussions are also given on the adrenal, hypertension and nephritis, and nephritis and allied diseases in infants and children. The present status of radiation therapy of the genitourinary system is well presented. Appropriate emphasis on the intimate relationships of the basic sciences to clinical practice is presented throughout. This set of books is too large for use by the medical student, but it should be in the library of every urologist, resident in urology, internist, and pediatrician, since it contains much material that cannot be found elsewhere.

Neck Dissections. By James Barrett Brown, M.D., Professor of Clinical Surgery, Washington University School of Medicine, St. Louis, and Frank McDowell, M.D., Assistant Professor of Clinical Surgery, Washington University School of Medicine. Publication number 207, American Lecture Series, monograph in Bannerstone division of American Lectures in Surgery. Edited by Michael E. De Bakey, M.D., Professor of Surgery and Chairman of Department of Surgery, Baylor University College of Medicine, Houston, Tex., and R. Glen Spurling, M.D., Clinical Professor of Surgery, University of Louisville, Louisville, Ky. Plastic Surgery Division, editor: James Barrett Brown, M.D., Professor of Clinical Surgery, Washington University School of Medicine. Cloth. $7.50. Pp. 163, with 82 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, Canada, 1954.

This excellent monograph is well written, profusely illustrated, and contains an extensive bibliography. The indications and limitations of neck dissections are carefully considered as well as the technique of the dissection itself. The technique is well illustrated with colored drawings. The chapter on postoperative care and complications is highly recommended. This book should be in the library of everyone interested in neoplasia, particularly surgeons treating neoplasia about the head and neck.

Freedom from Fear. By Lester L. Coleman, M.D. Cloth. $3.95. Pp. 285. Hawthorn Books, Inc., Publishers, 70 Fifth Ave., New York 11, 1954.

This book provides the lay reader and his physician with an intelligible discussion of the role fear and anxiety occupy in everyday life. In a world through which fear stalks unchecked by enlightenment and reason, there is substantial need for an easily understood, rationally plotted book that will help dissipate the anxieties that beset many men and women on a variety of medical fronts—chronic disease, pain, blindness, deafness, surgical operations on young and old, pregnancy, and childbirth, to list an outstanding few. A leisurely reading of this book should help doctors understand their patients better and patients understand themselves.

Radiology for Medical Students. By Fred Jenner Hodges, M.D., Professor and Chairman, Department of Radiology, University of Michigan, Ann Arbor, Isadore Lampe, M.D., Professor, Department of Radiology, University of Michigan, and John Floyd Holt, M.D., Professor, Department of Radiology, University of Michigan. Second edition. Cloth. $8. Pp. 439, with 106 plates. Year Book Publishers, Inc., 200 E. Illinois St., Chicago 11, 1954.

This is an ideal textbook for undergraduate medical students. The authors have adhered to their original system of presenting the material, a system which provides the student with an opportunity to develop a sound basic understanding of medical radiology. The diagnostic and therapeutic considerations have been amplified and strengthened, and this volume continues to be one of the best available to medical students. The experienced radiologist, likewise, should derive much worthwhile knowledge and assistance from it. This volume is invaluable for anyone interested in this type of treatment even though he may refer his patients for radiological investigation and therapy. To those not practicing radiology, this book provides a background in radi-

ology, and familiarity with its contents should improve the standards of consultation. The end-result is likely to be better treatment for the patient. This book is most acceptable from the standpoint of the type and illustrations.

American Nursing: History and Interpretation. By Mary M. Roberts, R.N. Cloth. $6. Pp. 688, with illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1954.

The author has presented a review, analysis, and interpretation of the events and trends of American nursing since the beginning of this century. The growth and development of this profession are traced through the early period of uncontrolled expansion in this century, the depression years, the two World Wars, and up to the present. The author, who has been instrumental in shaping the course of nursing affairs for over a quarter of a century, is eminently qualified to serve as a historian of American nursing. This book includes not only a report and appraisal of past activities but an interpretation of its functions and aims. It is exceptionally valuable in presenting a realistic picture of nursing not as an isolated unit but as a functioning unit in the everchanging social scene. It throws light on the complex interrelationships among the health professions and the various components of the nursing profession. This book is highly recommended.

Hand Atlas and Textbook of Human Anatomy. Part II: Vascular System, Viscera, Nervous System, Sense Organs. Volume III: Atlas. By Werner Spalteholz. Fifteenth edition revised and enlarged by Rudolf Spanner, Professor of Anatomy, Cologne, Germany. Cloth. $11.50. Pp. 454, with 590-1364 illustrations. Little Brown & Company, 34 Beacon St., Boston 6; Scheltema & Holkema's Boekhandel en Uitgeversmaatschappij N.V., Rokin 74-76, Amsterdam, C, Netherlands; S. Hirzel, Stuttgart; Königstrasse 2, Leipzig C.1, Germany, 1954.

The subject matter of this standard work on human anatomy has been rearranged. This has been done advantageously in that the work is divided into an atlas and a text. The illustrative material assembled has been presented so as to aid the student in the progression of specific dissections. Arteries and veins appear on opposite pages and the pertinent lymph channels are grouped next to them. This is extremely helpful in that it eliminates the unnecessary turning of pages when the student is dissecting and, at the same time, reading and coordinating the text. The microstructure of the organs has been included whenever possible. This aids in understanding the form and function phase of anatomy. In the section dealing with the nervous system, the description of the brain is followed by a didactic and concise discussion of the centers and pathways. Over 300 new illustrations have been incorporated into this atlas. The arrangement of material and its presentation give this book a new garb, but the flavor of the old "Spalteholz" remains. This work can be recommended unreservedly as an excellent reference for anyone interested in anatomy.

Health Yearbook 1954. Compiled by Oliver E. Byrd, Ed.D., M.D., F.A.P.H.A., Professor of Health Education, and Director, Department of Hygiene, School of Education, Stanford University, Stanford, Calif. Cloth. $4.50. Pp. 325. Stanford University Press, Stanford, Calif.; Oxford University Press, Amen House, Warwick Sq., London, E.C.4, England, 1954.

Although some confusion might be caused by the title, since 77 of the 268 health discussions abstracted are from 1953 literature, at least one going back as far as July of that year, those familiar with previous editions know that the volume goes to press in the latter part of the year and therefore cannot cover it completely. Some works of a similar nature have started the practice of hyphenating the title to give a more exact idea of the coverage. As usual, the editor has done a good job in his selection of the contributions abstracted, and this is important because these were drawn from an original nucleus of about 1,600 articles. Even though it obviously cannot be considered complete in any sense, this type of service is useful as an informative guide on a wide variety of topics. Among the general subjects covered are safety, school health, nutrition and health, mental health and disease, health services, infection and immunity, fatigue, and family health. Each source is given in the extensive bibliography, and there is an author index, a subject index, and an alphabetical list of sources to facilitate quick reference.

The Study of the Brain: A Companion Text to the Stereoscopic Atlas of Neuroanatomy. By Hyman S. Rubinstein, M.D., Ph.D., D.A.B.P.N., Attending Physician in Neurology and Psychiatry, United States Army Hospital, Aberdeen Proving Ground, Maryland. Foreword by Carl L. Davis, M.D. Cloth. $9.50. Pp. 209, with 93 illustrations and 44 plates. Grune & Stratton, Inc., 381 Fourth Ave., New York 16, 1953.

This is a textbook for students of neuroanatomy. Although the subtitle indicates that it is intended as a companion text to the "Stereoscopic Atlas of Neuroanatomy," this book can be used independently since sufficient illustrations have been included. The book is clearly written, avoids excessive detail, and contains a number of instructive, original, diagrammatic drawings. Functional aspects are adequately considered. In short, this is a good textbook of neuroanatomy written primarily from a didactic viewpoint.

Basic Anatomy. By G. A. G. Mitchell, O.B.E., T.D., M.B., Professor of Anatomy and Director of Anatomical Laboratories in University of Manchester, Manchester, England, and E. L. Patterson, M.D., Ch.B., B.Sc. Cloth. $10. Pp. 438, with 286 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2, 1954.

The purpose of this book is to provide a condensed representation of human anatomy in which a correlation between anatomy and related biological subjects, such as human evolution, embryology, physiology, and clinical medicine, is considered. In essence, it is an abbreviated text of gross anatomy with a fair amount of histology. As such, it is one of the best books of its kind. Although detail has generally been eliminated, the authors have included enough information to present a logical picture of general principles of anatomic structure. The book apparently is based on an introductory lecture course in anatomy given by the authors for medical and dental students. For such a course this book is an ideal text.

Endothelium: Its Development, Morphology, Function, and Pathology. By Rudolf Altschul, M. U. Dr., Professor in Histology, University of Saskatchewan, Saskatoon, Canada. Cloth. $3.50. Pp. 157, with 9 illustrations. The Macmillan Company, 60 Fifth Ave., New York 11, 1954.

This monograph is a review and summary of the essential data published in this field. After a brief preface and an introduction, the reviewed material is presented in seven chapters on historic notes and nomenclature, morphology, development, tissue culture, metaplasia, functions, and pathology. The eighth chapter presents a summary and conclusions of the preceding seven. The bibliography lists 359 references. The subject is adequately reviewed and presented. Tissue morphologists interested in endothelium should find this monograph useful.

Anatomy: Regional and Applied. By R. J. Last, M.B., B.S., F.R.C.S., Professor of Applied Anatomy, Royal College of Surgeons of England, London. Cloth. $10. Pp. 665, with 309 illustrations. Little, Brown & Company, 34 Beacon St., Boston 6, 1954.

This is essentially a textbook of regional human anatomy. It is not intended to present applied anatomy in the usual meaning of surgical anatomy. Instead, the applications of anatomic knowledge to medicine and surgery are systematically pointed out. Embryologic, phylogenetic, and physiological phenomena are stressed if helpful to the understanding of anatomic structure. The author has avoided presenting minutiae unless necessary for the understanding of anatomic principles. The text is clear and to the point, and the illustrations are generally good.

Introduction to Psychiatry. By O. Spurgeon English, M.D., Professor and Chairman, Department of Psychiatry, Temple University School of Medicine and Hospital, Philadelphia, and Stuart M. Finch, M.D., Assistant Professor of Psychiatry, Temple University School of Medicine and Hospital. Cloth. $7. Pp. 621. W. W. Norton & Company, Inc., 101 Fifth Ave., New York 3, 1954.

This textbook should be popular in medical schools. It presents psychoanalytic views in the form that students like. The definitions are short and easily memorized. There are no complicated discussions of metaphysics, art, or psychology. The authors frankly say that they describe that system of psychiatry most generally accepted in American practice. Each case history is short and to the point. The trouble with other psychoanalytic texts is that they are concerned less with what to do than how to think. Medical students are rightfully suspicious of matters

that cannot be reduced to some sort of ritual for satisfying patients or board examiners. This book shows that psychiatry can be an empirical practice like surgery or dermatology. In the absence of any legitimate science of mental disease it is well to have an official and conservative form of treatment guaranteed at least not to harm the patients. Our state hospitals and clinics are overflowing, and the burden of work has to fall on physicians who have no time for doubts and could ill afford them. For coming generations of such physicians this book should be invaluable.

The Clinical Significance of Disturbances in the Delivery of Sweat. By Marion B. Sulzberger, M.D., F.A.C.P., and Franz Herrmann, M.D. Publication number 178, American Lecture Series, monograph in Bannerstone Division of American Lectures in Dermatology. Edited by Arthur C. Curtis, M.D., Chairman, Department of Dermatology and Syphilology, University of Michigan, Ann Arbor. Cloth. $6.75. Pp. 212, with 55 illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, Canada, 1954.

Since World War II, largely because of experiences gained in tropical areas where many service people were incapacitated by diseases involving the sweat glands, there has been an increased interest in the mechanism of sweating. The authors reported on their observations in 1950 and 1951 at meetings of the American Academy of Dermatology, and, as a result of these discussions, this book was compiled. The result is a work that is as up to date as a book can be. The material is divided into three parts. The first, dealing with investigative approaches, describes briefly the various methods of assaying perspiration: noting changes in body weight, the use of special collecting chambers for making hygrometric measurements, temperature differential, infrared ray absorption, various chemical reactions, measurements of electrical resistance, and color indicator methods. The physiological data obtained by these various techniques are then discussed, with consideration given to differences observed in healthy and sick persons, to sex and race differences, to the association with excretion of sebum, and to physiological fluctuations. The second and largest section of the book deals with all aspects of the pathogenesis and characteristics of sweat disturbances, such as hyperhidrosis, dyshidrosis, hypohidrosis, and anhidrosis, and discusses the relationship of emotional factors, physical exercise, heat, autonomic stimulation, hormonal disorders, nerve injuries, and drug reactions to them. The interesting concept is brought out that there are no sharp lines of demarcation between the three categories of sweat disturbances—in fact, there may be overlapping of any two or all three. The concept that certain diseases such as atopic dermatitis may be maintained and aggravated by the mechanics of sweat retention and that perhaps allergens may be carried by the sweat and may leak out or be forced out into adjacent structures constituting in effect an autogenous intracutaneous infection is also interesting. The third section discusses both systemic and topical therapy with the quaternary ammonium compounds, anticholinergic compounds, adrenergic inhibitors, sedatives, antihistamines, air conditioning, climatic changes, and ventilated footgear. The book contains an index and a large list of references. The presentation is stimulating, and a reading of it should be rewarding not only to the dermatologist but also to internists and others interested in fundamental principles of medicine.

Cleft Palate and Speech. By Muriel E. Morley, B.Sc., F.C.S.T., Speech Therapist to Royal Victoria Infirmary, Hospital for Sick Children, and Newcastle General Hospital, Newcastle-upon-Tyne, England. Third edition. Cloth. $4.25. Pp. 173, with 64 illustrations. Williams & Wilkins Company, Mount Royal and Guilford Aves., Baltimore 2; E. & S. Livingstone, Ltd., 16 and 17 Teviot Place, Edinburgh 1, Scotland, 1954.

This new edition of an excellent monograph covers its subject in detail. The text is representative of the general current thinking of contemporary British plastic surgeons. The purpose of the book is to present the steps necessary to produce acceptable speech in the child with a cleft palate. An excellent historical review of cleft palate therapy is included. Methods of closure are discussed under three headings: (1) closure by median suture (Von Langenbeck), (2) flap methods of closure, and (3) methods involving compression of the upper jaw (Brophy) with the inherent poor results. A closure that will produce physiological function is the present aim. The Wardill "four-flap" method is the most popular operation in use by the British plastic surgeons. It is often combined with a Wardill pharyngoplasty. Fracture of the hamular processes is usually carried out. The advantages of this method is that it not only gives midline closure but also produces some additional palate length. Some notes are given on feeding problems. There is an excellent discussion of the development of speech in the child with a cleft palate. The time for surgical closure is considered. If done too early, the operation is technically difficult and may interfere with normal epiphysial growth of the upper jaw. The author believes that the best speech results if closure is done when the child is not more than two to three years of age. When done later, the recovery to a point of near normal speech is prolonged. A good chapter is included regarding how one can best evaluate results. Methods of postoperative speech training are included for various age groups. This small textbook should be read by every plastic surgeon and speech therapist interested in solving the problems of the child with a cleft palate.

Connective Tissue in Health and Disease. Edited by G. Asboe-Hansen, M.D., Connective Tissue Research Laboratory, University Institute of Medical Anatomy, Copenhagen. Cloth. $7.50; 50 Danish kroner. Pp. 321, with illustrations. Ejnar Munksgaards Forlag, Nørregade 6, Copenhagen K, Denmark, 1954.

This book is comprised of essays on connective tissue, written largely by Scandinavian and American authors in this field. The title is somewhat misleading. The authors contributing to this book are, with few exceptions, chiefly interested in the intercellular material, i. e., the ground substance and fibrous components of connective tissue. Consequently, work on this subject constitutes the major theme of this book. The cellular functions of connective tissue, such as cellular defense mechanisms, are not discussed. A book of broader significance and more in line with the title would have resulted from the inclusion of the cellular aspects of connective tissue. Some of the contributions are too general to be informative. Others are highly factual and more in the nature of a review of the literature. This latter aspect is the most valuable property of the book. Those who are interested in a current review of the present knowledge of the intercellular materials of the connective tissue should find this book useful.

The Treatment of the Alcoholic. By Fritz Kant, M.D. Cloth. $3.50. Pp. 130. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill.; Blackwell Scientific Publications, Ltd., 49 Broad St., Oxford, England; Ryerson Press, 299 Queen St., W., Toronto, 2B, Canada, 1954.

The author's aim in this volume is to give a "complete, up-to-date presentation of the potentialities and limitations of treatment." He does this admirably. He emphasizes the alcoholic and not alcoholism. A wide range of problems is dealt with, including theories on etiology, psychological and physiological manifestations, psychotherapy, and somatic aids, all aiming toward an integrated therapy of the alcoholic person in the environment in which he lives. The clinical descriptions, the programs for the treatment of the acute states, and the planning of long-range management are complete and clearly presented. The author reserves the use of steroids for the acute states and considers conditioned reflex therapy and disulfiram (Antabuse) as essential tools but only for getting the additional necessary treatment started. This latter includes a discussion of family problems, education of family and friends, and the use of meaningful diversions and moral supports. It is emphasized that the only realistic goal is total abstinence from the drug. It is axiomatic that the alcoholic can never become a successful social drinker. This is an optimistic, thoughtful, and remarkably complete little book, which should serve as a handy guide in the management of alcoholic emergencies and in planning long-range, integrated therapy. Its information is readily available not only to physicians but to all others interested in the problem including the patient's family. There is an adequate bibliography and a glossary that will be helpful to the nonprofessional reader.

QUERIES AND MINOR NOTES

YELLOW FEVER VACCINE

TO THE EDITOR:—*Owing to the yellow fever epidemic that has developed in Venezuela, we are anxious to learn if any new preventive methods have been evolved. We will be most grateful for your opinion on (1) minimum age of infants for inoculation; (2) possibility of harmful effects to persons afflicted with allergies, asthma, etc.; and (3) incidence and severity of cases in persons inoculated against the fever.*

M.D., Venezuela.

ANSWER.—In the western hemisphere and in the British possessions, 17D yellow fever vaccine administered subcutaneously is still the preferred method of immunization against yellow fever. In the French African possessions, the French neurotropic yellow fever strain of virus given by scarification is used. In the United States and in Britain it is felt that the French neurotropic strain of virus causes too high a rate of encephalitic reactions to be used in a vaccine. The simplicity of the French method of administration of yellow fever vaccine by scarification has resulted in attempts at administration of the 17D strain of virus by this method. Good antibody response has been obtained. Virus given by scarification can be inactivated by the application of antiseptic to the skin before the vaccine is administered, and cooperation of the subject vaccinated is necessary to be sure that the vaccine dries on the skin. Inoculation of the vaccine subcutaneously is a surer method of immunization.

Infants as young as 15 days of age have been immunized against yellow fever without reaction, so there appears to be no minimum age. Severe allergic reactions following the use of 17D vaccine have been rare. Two instances are reported, both in persons with a history of sensitivity to egg. Exacerbation of a preexisting allergy has been reported. Allergic reactions in persons with no previous history of allergy have been mild and relatively uncommon. Before the administration of 17D vaccine patients should be questioned as to a history of allergy. If a positive history is obtained, the danger of a severe reaction can be minimized by the administration of 0.1 ml. of vaccine intracutaneously. Adequate antibody response has been reported to be obtained by this method. Scarification can also be used—two scratches about 1 cm. long through each of two drops of vaccine. General reactions to the live virus contained in 17D vaccine have generally been mild and occurred in about 10% of patients. Symptoms usually occur five to eight days after vaccination and consist mainly of headache and muscular pains, particularly in the back and extremities. Allergic reactions to chick embryo protein and reactions to the 17D virus are not a problem of any consequence with present-day vaccines, and there should be no hesitancy in using 17D yellow fever vaccine.

TRANSPLANTATION OF BONE MARROW

TO THE EDITOR:—*What are the chances of transplanting bone marrow from one person to another?*

C. L. Concklin, M.D., Corpus Christi, Texas.

ANSWER.—Bone marrow can be transplanted successfully, providing the donor's marrow and blood cells developing from it are compatible with the recipient's tissues and blood cells. Bone marrow is transplanted intrasternally in human beings. The therapeutic results are successful, but no biopsies or other tests have been performed to prove the anatomic proliferation of the donor's marrow. However, in experimental animals the marrow was transplanted into liver and muscles and biopsies were performed to show the successful new growth of transplant. Bone marrow is transplanted from one person to another to have the transplant produce various blood cells (especially of the granulocytic types) or to stimulate the recipient's marrow. Bone marrow should be transplanted into the flat bones, such as sternum or ilium. The donor's marrow, which should be obtained by surgical incision and not by aspiration because aspiration contains very little marrow but mostly peripheral blood, should be ground up into an emulsion, filtered, and injected like an intraosseous infusion. The marrow spaces of the manubrium or the upper segment of the body of the sternum could hold at most 3 cc. each and the ilium, probably, not more than 5 cc. Any injection of more than the amount that its cavities could hold would leave that bone and enter the general circulation, thus actually becoming an intravenous infusion. This excess would stimulate the recipient's marrow by chemical means. Some physicians advocate transplants of 3 cc. a day for five days; others advocate about 30 cc. a day for five days; another one transfused 1 cc. of marrow daily for two and a half months.

Homotransplants are used in various conditions to stimulate granulocytosis. They have been used on rats and rabbits with bone marrow depressed by injection of benzene, x-ray irradiation, and whole-body exposure to lethal doses of irradiation. In human beings they have been used in isochromatic anemia, leukopenia, neutropenia, granulocytopenia, hemorrhagic aleukemia, thrombocytopenic purpura due to typhus, erythema nodosum, cirrhosis of the liver, and hemorrhagic thrombopenia due to allergy to quinine and antazoline. Since 1940, when Morrison and Samwick transfused human marrow into the sternum, this method has become a standard procedure in some countries.

PERSISTENT LEUKOCYTOSIS

TO THE EDITOR:—*A 40-year-old white man was found in 1949 to have a white blood cell count of 12,650 per cubic millimeter with 52% segmented cells, 11% stab cells, and 37% lymphocytes. He was not sick in any way. In 1952 he was found to have a white blood cell count of 20,200 per cubic millimeter with 66% segmented cells, 7% stab cells, 2% juvenile forms, 1% eosinophils, 1% basophils, 21% lymphocytes, and 2% monocytes. Since that time many white blood cell counts have been done. The count has been as low as 10,000 but generally runs in the neighborhood of 20,000 per cubic millimeter. He has continued to deny any significant symptoms except three recent episodes of transient, localized muscular aching, which lasts about four days. He has not been known to have any fever in the past three years. About two weeks ago he had tenderness of the left mandibular joint, which disappeared spontaneously. His hemoglobin level has been between 13 and 15 gm. per 100 cc., with a normal red blood cell count. In the past he had a "backache" that, in 1945, was responsible for his discharge from the Army. Physical examination revealed normal vital signs and no adenopathy, splenomegaly, hepatomegaly, or any other pertinent findings. Please suggest a diagnosis. Recent leukocyte counts have shown between 65 and 81% segmented cells, but this includes only about 5% band forms.*

Richard J. Puls, M.D., Dallas, Texas.

ANSWER.—There are many possible explanations for persistent leukocytosis in this patient who presents no significant symptoms except vague muscular aches and joint symptoms. The latter suggest rheumatoid arthritis or some other systemic disease, such as low-grade rheumatic fever, or a more specific infection, all of which are not infrequently associated with a mild leukocytosis. Emotional disorders associated with anxiety and depression may cause some leukocytosis. Moreover, a substantial number (about 10%) of normal persons have leukocyte counts in excess of 10,000 per cubic millimeter, the level usually designated as the upper limit of normality. In this instance the leukocytosis seems to be limited largely to the neutrophils. Aside from the conditions described above, intoxication by certain

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The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any medical or other organization unless specifically so stated in the reply. Anonymous communications and queries on postal cards cannot be answered. Every letter must contain the writer's name and address, but these will be omitted on request.

chemicals and drugs, particularly lead, mercury, or benzol in various organic solvents, and the possibility of early myelogenous leukemia or erythremia must also be considered. The physician should inquire into the occupational and environmental conditions carefully regarding drugs and chemicals. These should be eliminated if they can be incriminated. As far as early leukemia or erythremia is concerned, inordinate harm can be caused by the physician if anxieties regarding these possibilities are aroused in the patient. "Watchful waiting" over a long period may be necessary before these conditions become disclosed.

LUBRICANTS ON CASTERS IN SURGERY

To the Editor:—*In our hospital the use of all oily lubricants on casters in surgery has been banned by the local fire inspectors, who approve of dry graphite. Attempts to obtain results with graphite have failed here. I believe that an oily graphite suspension such as speedometer cable lubricant would drain off static charges well enough to prevent accumulation, but this point should be carefully determined by an agency with a properly staffed and equipped laboratory. Please advise.*

M.D., California.

This inquiry was referred to two consultants, whose respective replies follow.—Ed.

Answer.—U. S. Bureau of Mines Bulletin 386, 1933 (Guest, P. G.: Static Electricity in Nature and Industry) states:

> Grounding the framework of machinery is frequently not sufficient protection against static; where there is shafting it also should be grounded by a brush or tightly rubbing contact of woven copper or spring bronze. However, oil in the bearings of machinery may not offer as much resistance to the flow of electricity as has usually been supposed. Perry calls attention to the fact that in the design of electric generators insulation for the bearing pedestals is sometimes incorporated to prevent circulation of large induced currents of low voltage between the shaft and the frame. Watson states that vaseline and heavy oils may actually lower the resistance between sliding electrical contacts. Recent studies of the conductivity of hydrocarbons in films 0.01 mm. or less thick reveal that at stresses of about 100 KV per centimeter the liquids become conducting, approaching the behavior of metals in this regard. This conductivity is not a breakdown, as there is no evidence of spark and the liquid is restored to its original condition on removal of the stress.

Some tests recently made by the Bureau of Mines have provided first-hand corroboration of the above statement. These tests indicate that care should be taken to avoid excessive lubrication leading to the presence of an accumulation of oil on conductive caster-wheel treads and sides. They do not indicate any important increase in resistance to be due to proper lubrication whether or not the oil contains graphite. It seems quite possible that dry, conductive casters contaminated with soap, filth, and rust would show high resistance and fail more signally than lubricated ones in their mission of rapidly draining off the charges of static electricity.

Answer.—Although dry graphite may not be as convenient as could be desired, nevertheless nothing safer has yet been found, although there are prospects that something better will be developed.

AVERAGE LENGTH OF GESTATION

To the Editor:—*Please advise the minimum weeks of gestation for a viable baby.* *Elliott M. Tratt, M.D., Morris, Ill.*

Answer.—Menstrual data, fetal length, and other criteria are unreliable in determining the gestational age of a premature baby. Weight is the most dependable index of maturity. Fetuses weighing less than 800 gm. and having a gestational age of about 26 weeks survive very rarely. In one large hospital four babies weighing between 800 and 900 gm. at birth survived during the last 10 years, during which time about 40,000 women were delivered. About 5 or 6% of fetuses weighing less than 1,000 gm. and of less than 28 weeks' gestation survive. Thus, most teaching institutions consider the borderline of viability to be at about 28 weeks. One must keep in mind that the average length of gestation in the human female is 267 days or 38 weeks, and not 40 weeks, as calculated from the first day of the last menstrual period.

RHEUMATOID ARTHRITIS

To the Editor:—*A 55-year-old postmenopausal white woman has had fairly severe rheumatoid arthritis since 1951. She has on occasion responded temporarily to cortisone and corticotropin (ACTH) together with estrogenic hormones; however, the side-reactions or overeffects of these drugs have restricted their use. A year and a half ago therapy was begun with gold sodium thiomalate (Myochrisine), and she had a favorable response. However, after receiving 300 mg. over a period of many weeks, she developed a severe stomatitis. The gold was immediately stopped with the onset of the stomatitis. She was not taking cortisone at the time, and no BAL was used in the treatment of this toxic reaction. In view of the previous remission, would it be advisable to begin a new course of gold, possibly in conjunction with cortisone? If you feel trying gold again is justified, should a new product be used? Has previous experience shown that, if toxic reactions develop to gold in one course, they are likely to develop if gold is used again?*

Clark Rodman, M.D., Washington, N. C.

Answer.—Patients who have had toxic reactions during previous courses of gold therapy are likely, but not certain, to have them again in subsequent courses. The previous occurrence of stomatitis alone is not generally considered an absolute contraindication to the use of gold at some future time, although it would be an indication for great caution in dosage and careful observation of the patient. In the case cited it would seem justified to try another course of gold in smaller doses if other available measures of treatment do not adequately control the arthritis. It is doubtful that the use of equivalent doses of the other preparations of gold salts would be less likely to produce toxic reactions. There is currently considerable dispute as to the advantages, if any, of the combined use of gold and cortisone, but the concomitant use of these two measures of treatment may be considered for patients whose severe, active arthritis does not respond adequately to one or the other form of treatment. Whether gold or cortisone or both are used, general measures of treatment such as physical medicine, rest, protection of joints, and simple analgesics also should be used.

DOES NURSING AFFECT BREAST TUMORS?

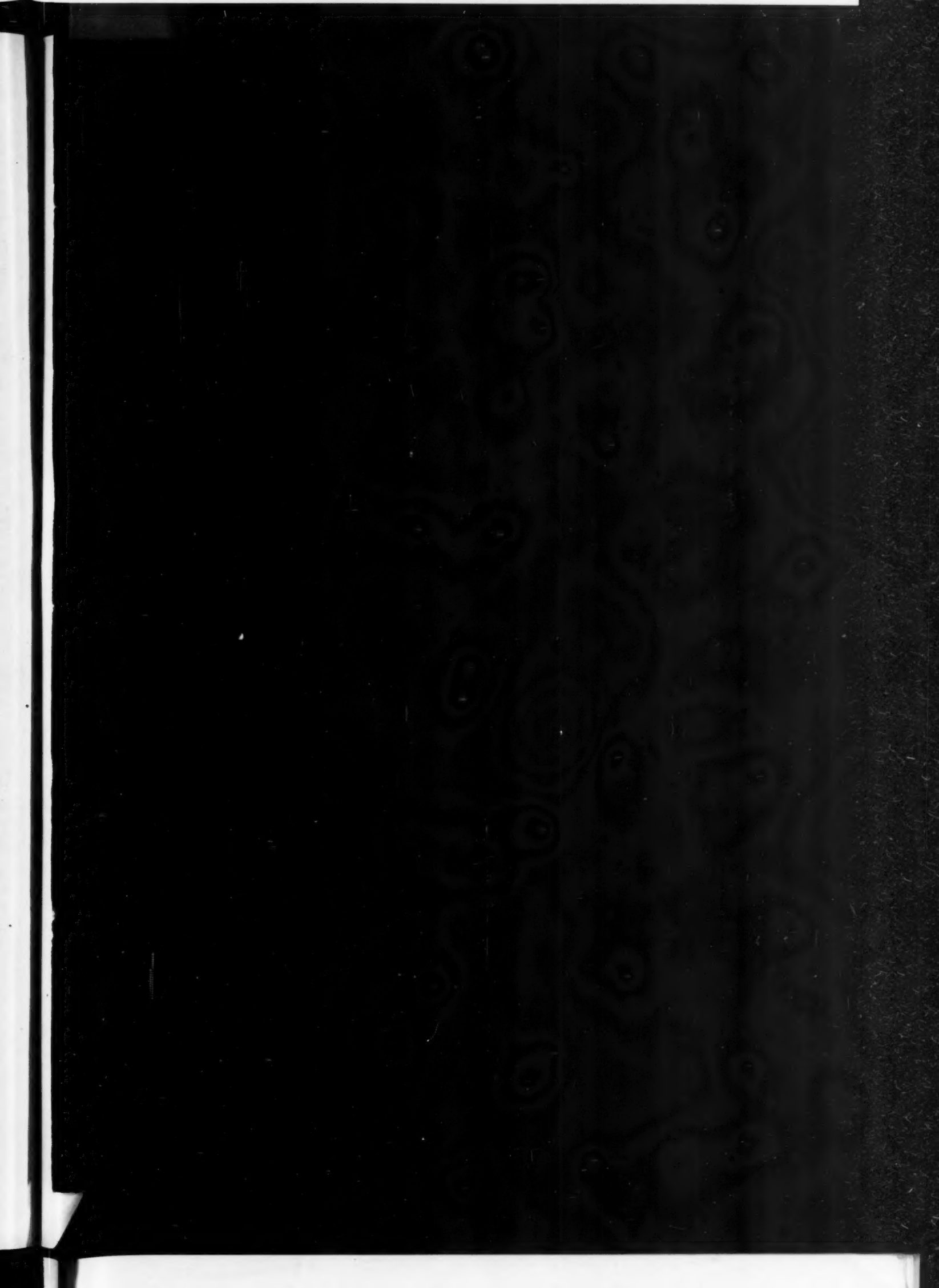
To the Editor:—*Does nursing lower the incidence of tumor of the breast or improve chronic cystic mastitis? I have noticed no difference between the mother who does and the mother who does not nurse her baby.*

Willard Crosley, M.D., Glendale, Calif.

Answer.—According to some authorities, carcinoma of the breast is commoner in unmarried or infertile women than in those who have borne children and suckled their young. "The old belief that carcinoma of the breast is decidedly more common in married women has been demonstrated to be a statistical fallacy" (Cheadle and Cutler). Simons states that women who have not had children and those who have not suckled their children are more predisposed to carcinoma of the breast. Lehmann also believes that suckling is a direct protection against mammary cancer. The evidence in regard to chronic cystic mastitis in relation to suckling is not so well documented. Observations made over a 40 year experience in obstetrics and gynecology prompt the reply that nursing does not adversely affect either carcinoma or chronic cystic mastitis.

BLADDER FILMS

To the Editor:—*What is the present status of taking films of full and empty bladder routinely by intravenous urography with 70% sodium acetrizoate (Urokon) in elderly men?*

M.D., New York.

Answer.—This procedure has been adopted as a safe method of estimating whether a significant amount of residual urine is present after spontaneous urination. It has the advantage of avoiding the risk inherent in catheterization, particularly in patients who have uninfected urine. Any of the accepted compounds ordinarily used for excretory urography may be used in carrying out this test.